

soundscape mixer

DSP-Powered Mixing Software
for PC based Audio Workstations

Reference Guide

Version 4.3
English Version



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1. Introduction

How to use the manuals

The SSL Soundscape product range has been designed from the ground up to be easy to use. If you are familiar with the Windows environment, installing PCI cards and the basics of recording and playing back digital audio, you could probably just set the system up and feel comfortable running a session within an hour. However, the SSL Soundscape Mixer offers a wealth of powerful and helpful features that you will only discover quickly by reading the SSL Soundscape Mixer Reference Guide, as well as this Installation and QuickStart Guide. It is therefore advisable, at some point, to read them both from cover to cover. For example, the Mixer is fully configurable, and while a few ready-made Mixers are provided, it is absolutely necessary to read the “Mixer” chapter of the Reference Guide early on to take full benefit from its capabilities. If you are new to digital audio recording, reading the manuals first is highly recommended. Please make sure you understand the Master Clock and Sample Rate concepts and that you understand the Mixer software’s routing possibilities. It is also a good idea to have the system switched on while you read the manuals, so that you can experiment with the features you read about. We trust that you will soon feel confident creating and using your own mixer configurations. However, even when it has become second nature, the comprehensive Table of Contents and Index (located respectively at the beginning and end of each manual) will provide convenient ways to check specific information whenever you need it.

Reading conventions

Key commands and key combinations

Some functions of the SSL Soundscape Mixer can be accessed through the use of computer keyboard keys or key combinations, as well as by using a mouse or other input device. In this manual computer keys will be shown between square brackets. For example, the key for the letter “E” will be written: [E]. Key combinations will be written using “+” signs. For example, pressing the “D” key while holding the “Control” key will be written as [Ctrl]+[D].

Menus

Where appropriate, to indicate a “path” under one of the main menus, the following format will be used: menu: Header|Submenu 1|Submenu 2|Submenu3|Item.

Screenshots

The appearance of the SSL Soundscape Mixer software on your computer screen may be different from the screenshots in this manual. This could be because your SSL Soundscape hardware

configuration is different, because you are using a different version of Windows, because you are using different Windows settings, or because the look of the SSL Soundscape Mixer can vary (e.g., the Toolbar can be moved around the main window). The screenshots themselves were not always made using the SSL Soundscape Mixer's default settings.

Disclaimer

These manuals have been written with great care and attention to detail, and we have attempted to cover every operational aspect of the SSL Soundscape Mixer. However, they are not contractual documents. Solid State Logic and/or the writer(s) of this manual cannot be held responsible for any loss or damage arising directly or indirectly from any error or omission in these manuals.

Trademarks

All trademarks are the property of their respective owners and are hereby acknowledged.

Website

The URL for the Solid State Logic website is: <http://www.solid-state-logic.com/>

2. Mixer

The SSL Soundscape Mixer runs on the Motorola DSP chips of the SSL Soundscape Mixpander card. The Mixer structure and routing are user definable and offer unrivalled flexibility for the use of real-time plug-in effects, EQs and processors. VST and VSTi plug-ins running on the host CPU can also be inserted directly in the SSL Soundscape Mixer environment. It is easy to create and save Mixers, and the entire configuration with all current parameter settings can be saved at any time for “total recall”.

The SSL Soundscape Mixer also supports full automation. It can generate and respond to MIDI automation data via the Console Manager program. This data must be recorded with a third party application (MIDI sequencer).

Each mixer column can have any number of real-time processes running (e.g., EQ, compressor, reverb, etc.) limited only by the available DSP power. In fact, you can have as many mixer columns as you need, and internal buses can be configured to send signals to internal real-time effects, with 99 selectable fader groups and solo groups. You can also use any SSL hardware (XLogic Alpha-Link) outputs and inputs as sends/returns to and from external effects units, while mixing tracks from your sequencing application.

Mixer password

The main Mixer password needs to be entered before you can use the SSL Soundscape Mixer. For the purpose of this Reference Guide it is assumed that you have entered the password as described in the SSL Mixpander QuickStart Guide. Otherwise, the Mixer password and any plug-in passwords can be entered at any time under menu: Settings|Passwords. (as described in the “Settings Menu” chapter).

Loading and saving Mixers

By default the “64 Ch Mixer.mix” Mixer is loaded on startup. To display it, double-click the SSL Soundscape Mixer icon in the system tray:

SSL Soundscape Mixer icon



You can load different mixers to experiment with by clicking “Open” under the File menu. A standard Windows dialog box will appear allowing you to select a mixer. The default path for mixer files is: C:\Soundscape\Mix\sslMixer.

NOTE: Mixers created in older versions of the software are generally compatible with newer versions.

Mixer concepts

The key to understanding the Mixer is simple: you can have virtually any type of configuration you want, provided that you do not exceed available DSP processing power. The number of mixer columns, EQs, sends, returns, peakmeters or faders and their positions in the mixer are completely user defined. In fact, every part of the Mixer is a plug-in element, just like a plug-in DSP effects algorithm. The only fixed parameters are the number of streams, number of buses and number of physical inputs and outputs available per card.

The terms “inputs and outputs”, “buses” and “streams” must also be defined:

- **Inputs and Outputs:** physical connections to audio devices outside the host computer, such as microphone preamps, mixing desk, stereo mastering recorder and so on. They may be called “physical” or “external” inputs and outputs and should not be confused with the “input elements” and “output elements” that will be described later in this chapter. In particular, while input elements and output elements may be assigned to an external input or output, they may just as well be assigned to a bus or stream...

- **Buses:** audio paths/connections that can be used to route audio signals between different parts of the SSL Soundscape Mixer, for instance between a send element and an input element. For the purpose of this manual, “buses” only exist within the SSL Soundscape Mixer.

- **Streams:** audio paths/connections that can be used to route audio signals either way between the SSL Soundscape Mixer and Windows applications such as MIDI+audio sequencers or virtual instruments.

Virtual mixer columns and DSP processing power

It is possible to “mute” mixer columns or mixer elements using the Mute tool (i.e. “turn them off”), and unlike what happens in a hardware only digital mixer, in the SSL Soundscape Mixer these muted mixer columns or elements do not consume DSP power. This means that you can construct a Mixer with duplicated columns having different parameter settings, for easy A/B comparison. Or you could build a Mixer that has a higher processing power requirement than the DSP(s) can provide, and just activate the elements that you need at any given time. This way, if you need to use more effects than available DSP power allows, you can adjust an effect in real-time, record the

output to a sequencer track, and then mute the real-time effect to save processing power for other purposes.

***NOTE:** Pressing the BP button (bypass) for an element does not reduce the DSP power consumption, as the element is still instantly available. Only muting the element with the Mute tool will reduce the DSP power used.*

Each mixer element consumes a certain percentage of DSP resources and the total percentage of DSP processing (P) and memory (M) resources used (i.e., the average percentage of resources used per DSP) is shown in the Status Bar at the bottom of the SSL Soundscape Mixer window (the Status Bar can be shown or hidden by ticking or unticking the “Status Bar” item under the View menu).

The total (P) and (M) resources available vary for different DSPs. DSPs 1 and 5 have identical resources. DSPs 2, 3, 4, 6, 7 and 8 resources are also identical, but different from DSP1 and DSP5 resources.

For instance, on DSP 1 or DSP 5, a single mono mixer column with output fader is around (P)0.5% (M)1.3%, the 2 band mono EQ is (P)1.4% (M)1.1% and the stereo TC Reverb is (P)29.7% (M)11.9%.

On DSPs 2, 3, 4, 6, 7 and 8, the figures are the same for the single mono mixer column with output fader and the 2 band mono EQ, but they are different at (P)26.8% (M)52.0% for the stereo TC Reverb.

The DSP power percentage that is reported as being used for each element is the **maximum** percentage that this element will use. In reality, there are several parameters that are important to the DSP, for example processing time, and program and memory requirements. This means that when two elements are combined, the overall DSP power requirement may be less than the sum of both percentages (i.e., one element may need more memory and the other may take more processing time, but with less memory used). In this case one algorithm is “masking” the power requirement for the other.

With multiple SSL Mixpander cards installed, the percentages are shown individually for each card. For cards with multiple DSPs (Mixpander/5 or Mixpander/9, the percentages relate to the total resources of all DSPs.

The (C) percentage shows the connection resources usage.

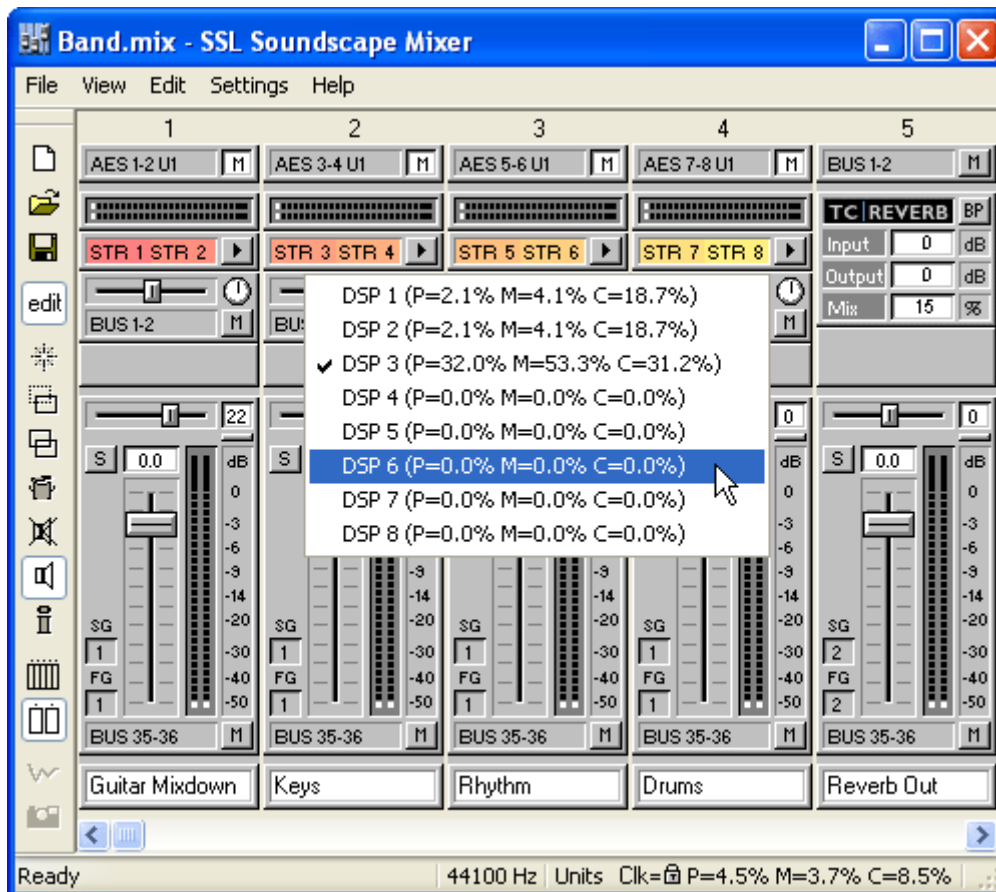
DSP resources and Mixer Auto Routing

Assigning a mixer column to a DSP

NOTE: This section assumes that Mixer Edit mode is selected (press [E] to switch between Mixer Edit mode and Mixer Control mode) and that the I/O and DSP Assign tool has been selected for the left mouse button by clicking on its icon:



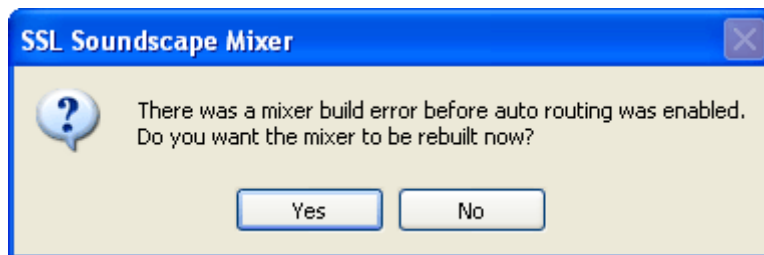
Clicking in an empty area of a mixer column running on an SSL Soundscape Mixpander DSP with the I/O and DSP Assign tool calls up a list of the available DSPs for that card with their current resources usage. This list remains visible for as long as the mouse button is held down. The ticked entry indicates the DSP that the mixer column is currently assigned to (DSP 3 in this example). The DSP assignment can be changed by placing the mouse pointer on the entry for the chosen DSP before releasing the mouse button:



Mixer Auto Routing

Mixer auto routing can be enabled or disabled by respectively ticking or unticking the “Auto Route Mixer” item under menu: Settings. If it is enabled, the SSL Soundscape Mixpander’s DSP resources will be allocated automatically when the mixer configuration is edited. This may override prior DSP resources assignments that have been made manually. For instance, a mixer column that has been assigned to DSP 4 may be reassigned to DSP 5.

If Mixer Auto Routing is enabled (“Auto Route Mixer” ticked) after the resources for a given DSP have been exceeded (i.e., when the Mixer is inactive), the following message will be displayed:



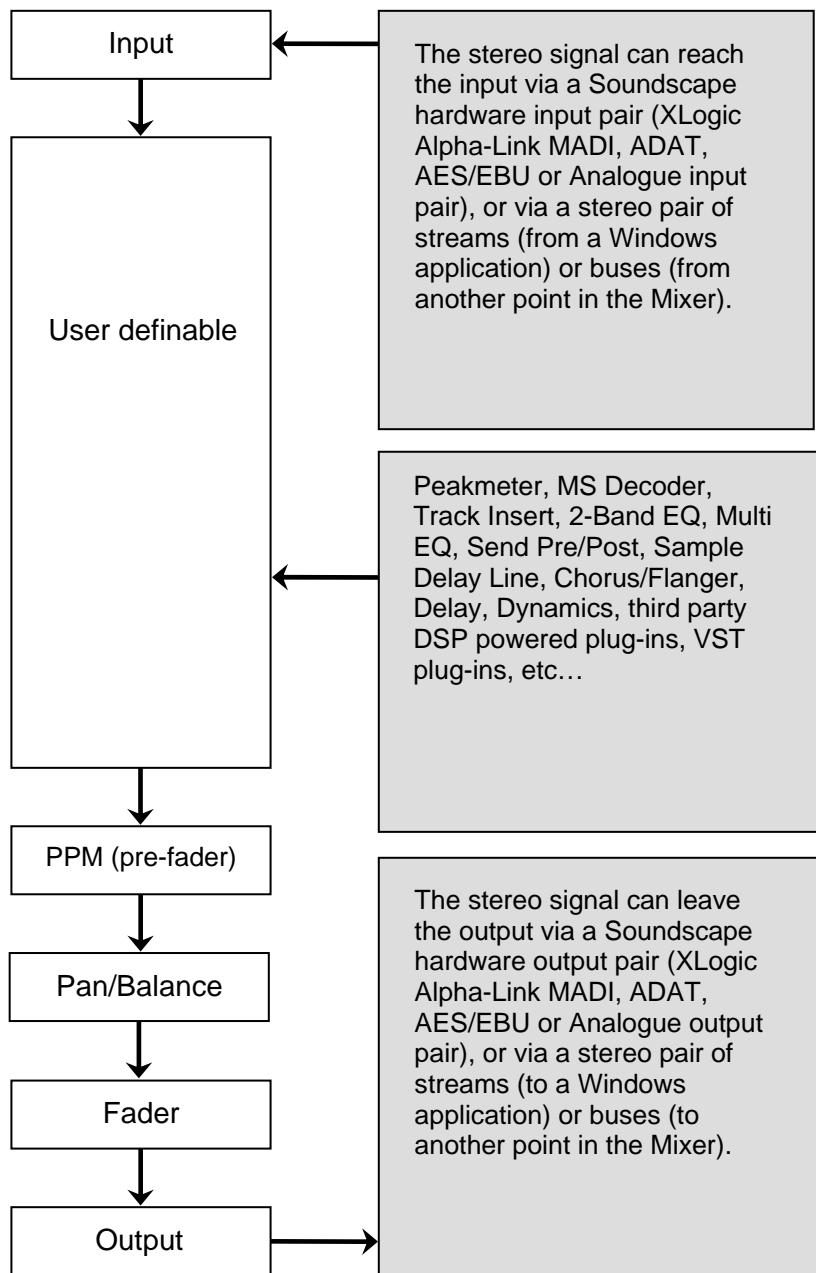
Clicking “Yes” will allow the resources to be reallocated automatically. Clicking “No” will keep the current DSP allocations, which will need to be edited manually in order to reactivate the Mixer.

***NOTE:** The Mixer can only be reactivated, manually or automatically, if the overall resources from all DSPs are sufficient for the current configuration. Auto Routing manages existing resources but cannot add new resources. However, an SSL Soundscape Mixpander provides enough resources for most mixer configurations.*

Basic mixer column structure

This diagram shows signal routing through a stereo input mixer column that uses an output element with fader. The signal can be fed via any of the external inputs, it can be internally sent from another mixer column via one of the "buses" or it can be received from a Windows application via a streaming input.

Once the signal is in the column, it can be mixed with a track output, equalized, its level can be adjusted and monitored, it can be delayed, sent to another mixer column or output and processed by one of the available "plug-ins". The fixed peakmeters are pre-fader so they will show a signal even if the fader is all the way down or if the mixer column output is muted. Any level changes resulting from an inserted mixer element (e.g. fader or EQ) will be shown by the fixed peakmeters.

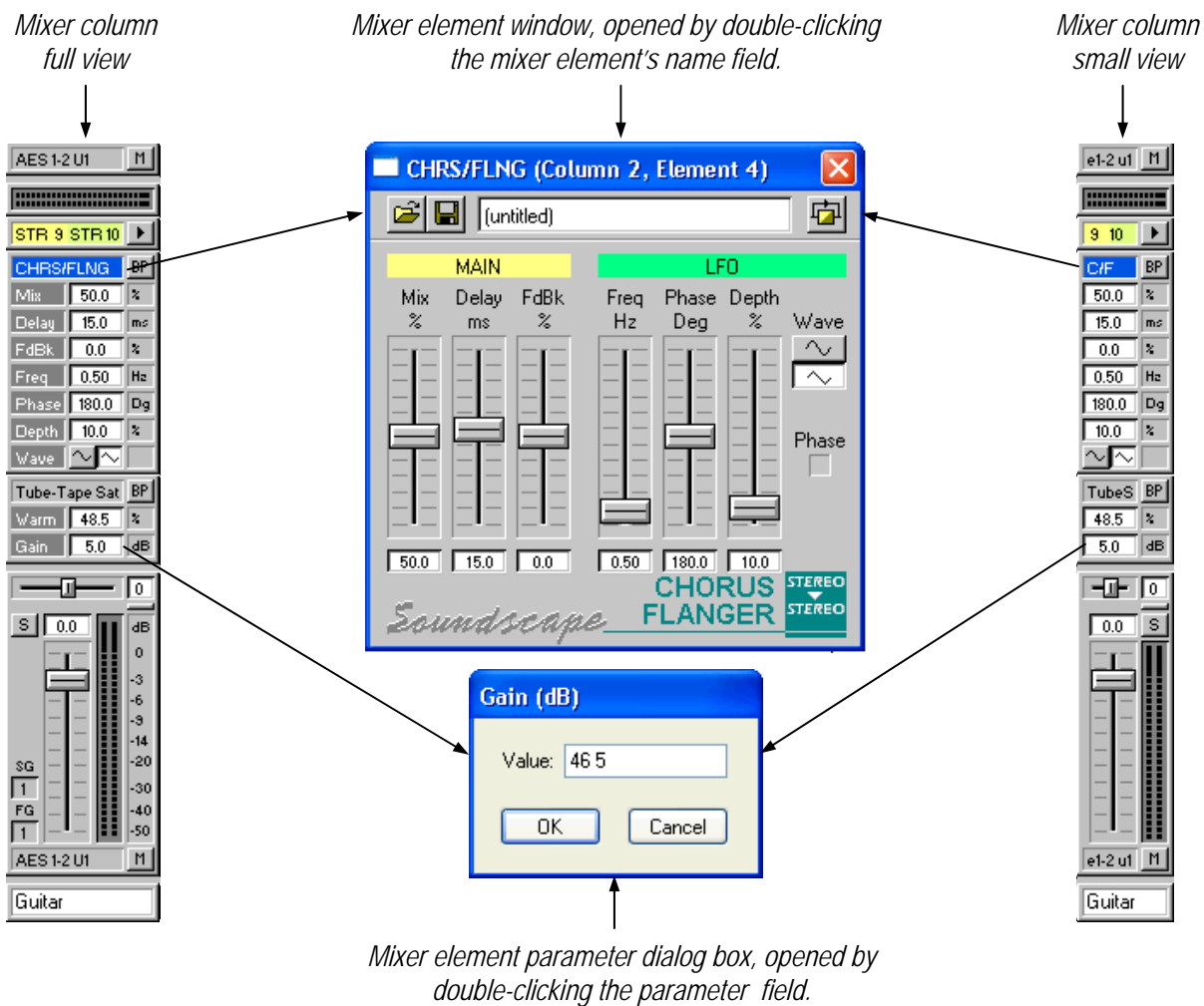


NOTE: The numbering and naming of the available inputs/outputs, buses and streams may vary depending on the hardware configuration, i.e., for instance, the type of XLogic Alpha-Link unit being used or the currently selected Sample Rate.

Viewing the Mixer

The SSL Soundscape Mixer can be displayed in either of two modes: full column size or small column size. Both options are available under the View menu, by clicking the corresponding View button in the Toolbar or by pressing the [X] or [Q] key on the computer keyboard. There is also an option to have the SSL Soundscape Mixer window “Always on top” under the View menu.

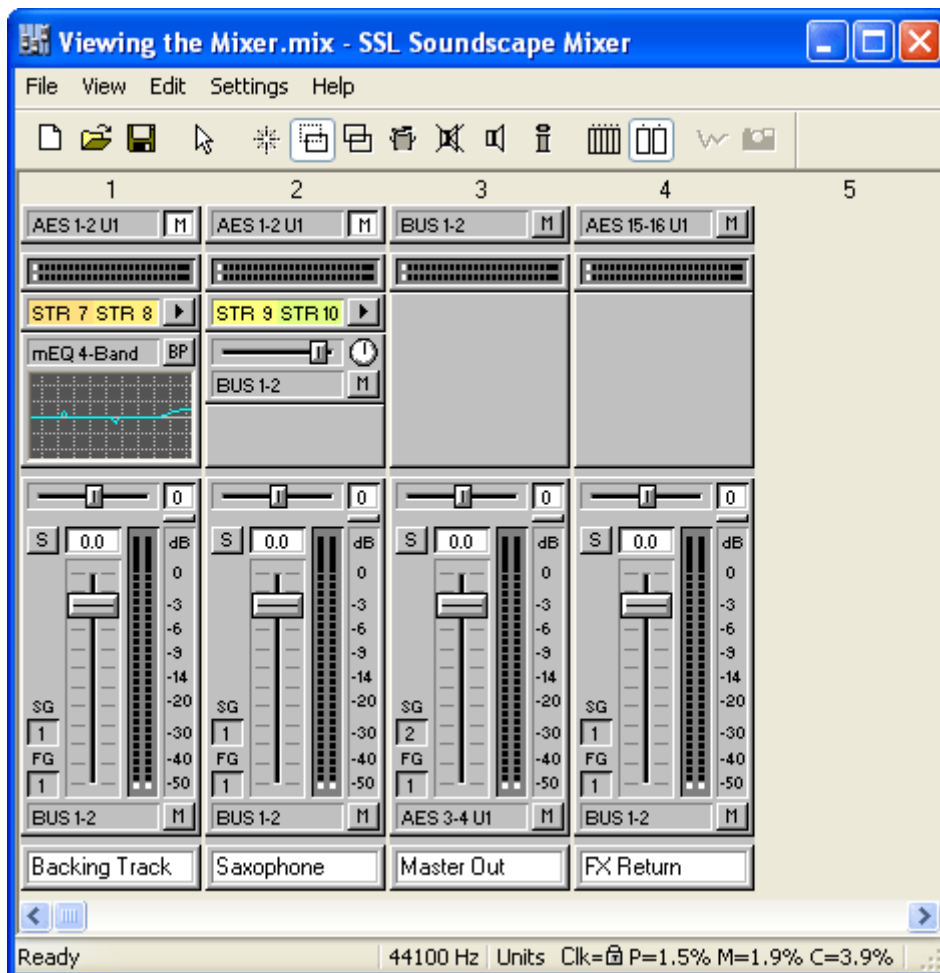
At 1024X768 display resolution, in full column size mode up to 11 mixer columns can be displayed across the screen. In small column size mode this number is increased to 17, but less details are visible. In particular, the solo group assignment boxes and fader and mute group assignment boxes are hidden in small view mode. Similarly, less parameters are displayed for certain mixer elements in small view mode. However, in most cases, double-clicking the name field of a mixer element will open a new, dedicated window where all parameters can be viewed and edited, and where presets, if applicable, can be loaded or saved. Double-clicking a parameter field will open a dialog box where the value for that particular parameter can be edited:



NOTE: Once a Mixer has been loaded, it remains active even if the window is closed.
The Mixer contains 128 mixer column slots, each of which can contain one mixer column, and a horizontal scrollbar is provided for navigation across the Mixer window.

A vertical scrollbar appears when necessary, i.e., whenever one or more mixer columns cannot be entirely viewed in the SSL Soundscape Mixer window. This is necessary because while the window can be resized, there is no limit to the number of mixer elements that can be inserted in a mixer column (within available DSP resources), and therefore there is no limit to the vertical size of a mixer column.

The following example shows a simple Mixer with two stereo columns and an effects return column, all bussed to a master mixer column. Slot 5 is empty:



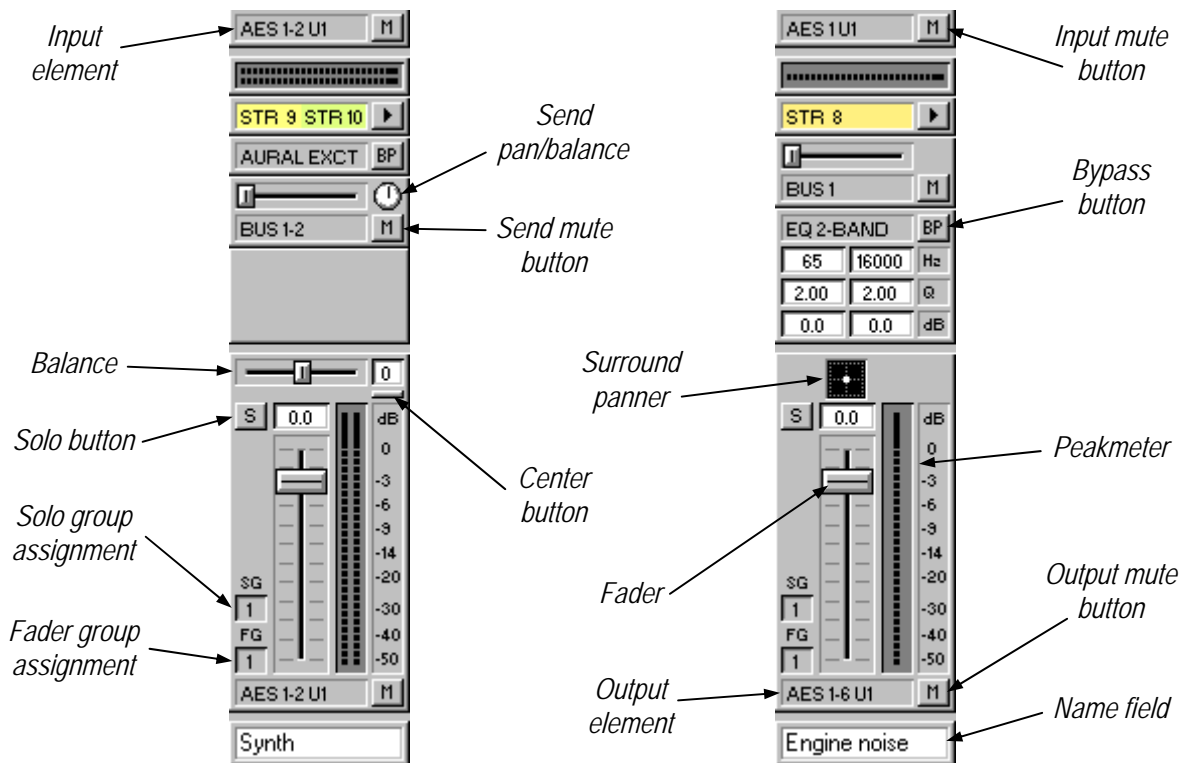
Notice that only the first mixer column has an EQ, while only the second mixer column has a send element. This is an example of putting power where it is needed. The restrictions of hardware mixing desks, and of inflexible, predefined software mixers have been relegated into the past. For example, if you want to send an EQ'd signal to an effects unit, drop an EQ in before the send. If you want a flat signal sent to the effects unit but want an EQ'd version sent to the master out, drop

an EQ in after the send. If you need one auxiliary send in a mixer column and eight in another column, just create them as required, and so on!

Mixer controls overview

Mixer columns can have the following standard controls and buttons:

- In all cases: an input element and an output element with mute buttons, and a name field.
- On most plug-in elements (not track inserts, peakmeters or sends): a bypass button.
- On send elements: a mute button (and a pan/balance pot if the send is stereo).
- On track inserts: a track arming button (as described in the "Tutorial" chapter).
- If the output element includes a fader: a pre-fader peakmeter, a solo button, a solo group assignment box, and a fader and mute group assignment box.
- If the mixer column has a stereo output, this output includes: a pan control (for mono in/mono to stereo out mixer columns) or balance control (for stereo in/stereo out mixer columns), and a center button to easily reset the pan/balance to center.
- If the mixer column has an LRCS or LRC-LsRs output: a surround panner.

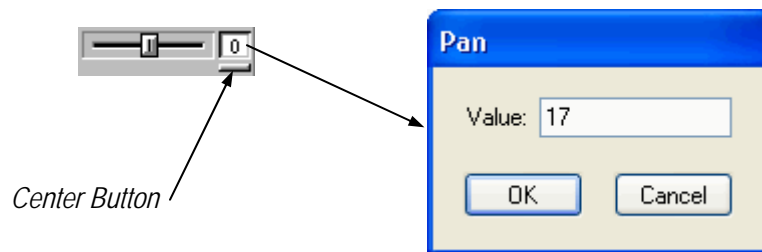


Output pan and balance controls

Output pan and balance sliders can be clicked and dragged with the mouse.

It is also possible to change the value in the box, to the right of the slider:

- Right-clicking or left-clicking in the box respectively increases or decreases the value in steps of 1.
- Right-clicking or left-clicking in the box and holding the mouse button down respectively increases or decreases the value continuously. The other mouse button can then be held down as well to speed up the process even more.
- Double-clicking in the value box calls up a dialog box where the required value can be entered:



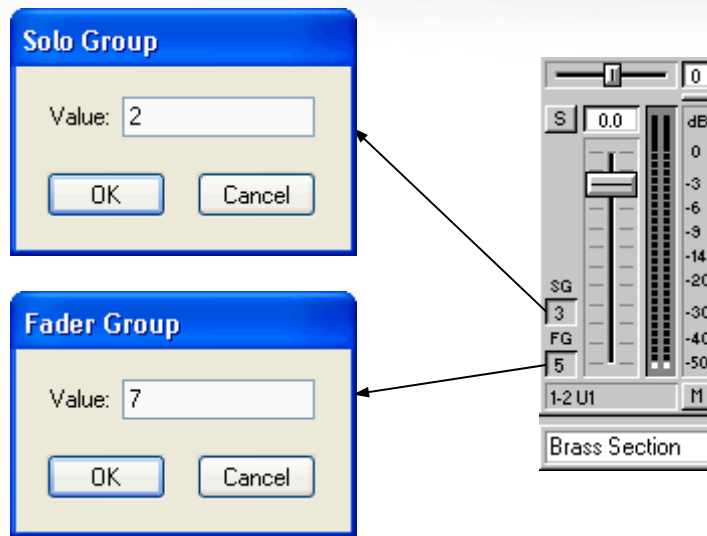
- Clicking on the center button below the value box resets the value to 0.

Fader and mute groups, output mute buttons, solo groups and solo buttons

Each output element that has a fader can be assigned to any one of 99 fader groups, and to any one of 99 solo groups. This applies regardless of the output type, (mono, stereo, mono to stereo, 4, 6 or 8 channels, LRCS, or 5.1), as long as there is a fader. Note that a single mixer column could have several such outputs, assigned to different fader groups and solo groups.

The fader group and solo group assignments can be selected in several ways:

- Right-clicking or left-clicking in the relevant group assignment selection box respectively increases or decreases the value in steps of 1.
- Right-clicking or left-clicking in the selection box and holding the mouse button down respectively increases or decreases the value continuously. The other mouse button can then be held down as well to speed up the process even more.
- Double-clicking in a selection box calls up a dialog box where the required fader group number or solo group number can be entered:



Faders

Whenever several output faders are assigned to the same fader and mute group, clicking and dragging any single one of them with the **right** mouse button will cause all the faders in the group to move together.

The grouped faders keep their original position relative to each other while they are moving, until one or more of them reaches minimum or maximum level and cannot move any further. Even after a fader has thus stopped moving with the rest of the group, moving back will restore its relative position within the group providing the mouse button has not been released.

Mute buttons

The mute buttons for grouped faders are also linked. **Right**-clicking any mute button will cause all the mute buttons in the same fader and mute group to take on the same muted/unmuted status, regardless of their prior status. The mute buttons can be used individually, regardless of their fader group assignment, by clicking them with the **left** mouse button.

Solo buttons, solo groups and fader and mute groups

Left-clicking any inactive (grey) solo button solos the corresponding output and silences all other outputs that have the same solo group assignment. Any previously soloed output which has the same solo group assignment is dropped out of solo mode and silenced, unless the [Ctrl] key is used as described below. The solo button that has been clicked turns red, and the solo buttons of the silenced outputs display a red "S" on grey background

Left-clicking an already active (red) solo button deactivates it.

Right-clicking an inactive solo button solos the corresponding output and all the outputs that have the same **fader and mute group** assignment. It also silences all the outputs that have both a different fader and mute group assignment **and** the same solo group assignment as any one of the soloed outputs. Any previously soloed output which has a different fader and mute group assignment **and** the same solo group assignment is dropped out of solo mode and silenced, unless the [Ctrl] key is used as described below. The solo buttons of all soloed outputs turn red, and the solo buttons of the silenced outputs display a red “S” on grey background.

Right-clicking an already active solo button deactivates it, and also deactivates any other active solo button that has the same fader and mute group assignment.

Solo buttons and the [Ctrl] key

If the [Ctrl] key is held down when left-clicking or right-clicking an inactive solo button, everything works as described above except that any outputs that are already soloed remain soloed.

The [Ctrl] key has no effect when left-clicking or right-clicking an already active solo button.

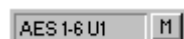
Naming a mixer column

Double-clicking on the name field at the bottom of a mixer column will call up a dialog box where the required mixer column name can be entered. This function cannot be accessed while in Mixer Edit mode.

Input/Output identification

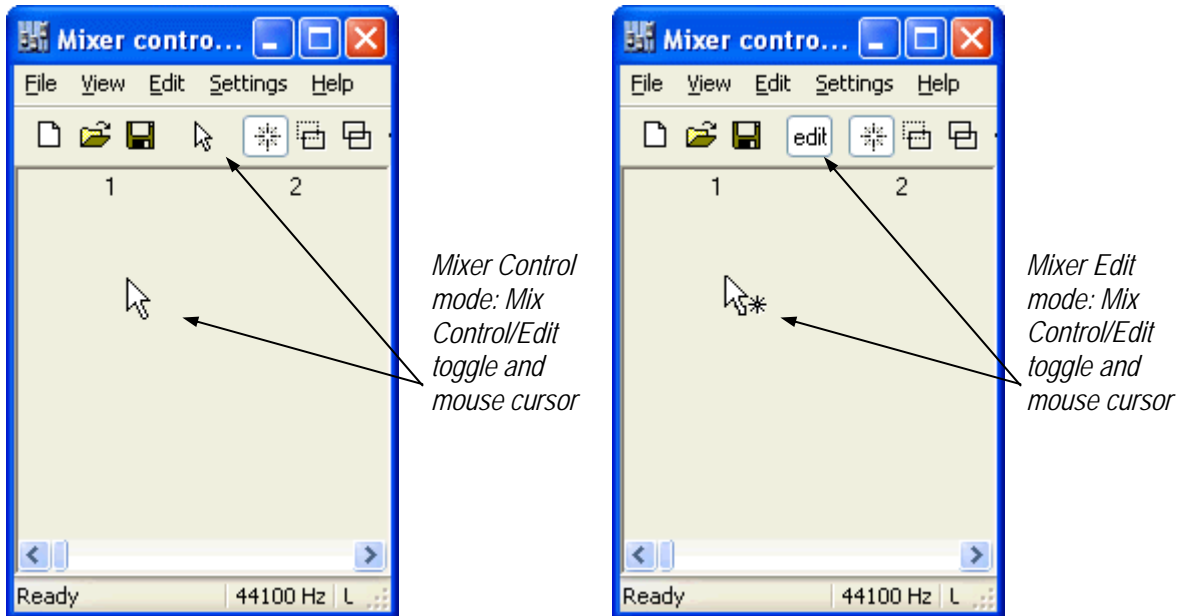
The current assignment of an assignable mixer element to a physical input/output, bus or stream is always clearly indicated by:

- A string of letters for the output type (ANA for Analogue I/O, AES for AES/EBU I/O, MADI for... MADI, I/O, ADAT for ADAT I/O, STR for Streaming I/O, BUS for Bus), one or two numbers (one for a mono input or output, two for a pair or larger group, e.g. 9-16 for an eight-channel input element), and a unit number (e.g., U2 for the second card if you have several SSL Soundscape Mixpanders installed in your PC). In Small View mode some of the characters are hidden. The input element shown below receives audio via the AES/EBU (“AES”) inputs 1 to 6 of the XLogic Alpha-Link connected to the first (or single) SSL Soundscape Mixpander unit (U1) installed in the PC:










Creating/Editing a Mixer

To create a Mixer, select “New” under the File menu. If a Mixer is already open, you will be given the option to save it. Then a blank Mixer will appear. Clicking on the Mix Control/Edit toggle selects either “Mixer Control” mode or “Mixer Edit” mode, and the Mix Control/Edit toggle itself and the mouse pointer change according to the current mode, as shown:



NOTE: It's also possible to load an existing Mixer and edit it.

Seven tools are available in the Toolbar, at the top of the SSL Soundscape Mixer window, for mixer creation/editing:

-  Create tool: for adding new mixer columns or mixer elements.
-  I/O and DSP Assign tool: for modifying routing or DSP assignments.
-  Mute tool: for muting mixer elements or complete mixer columns.
-  Move tool: for moving mixer elements or mixer columns.
-  Copy tool: for copying mixer elements or mixer columns.
-  Delete tool: for deleting mixer elements or mixer columns.
-  Element Info tool: used to display information about mixer elements or mixer columns.

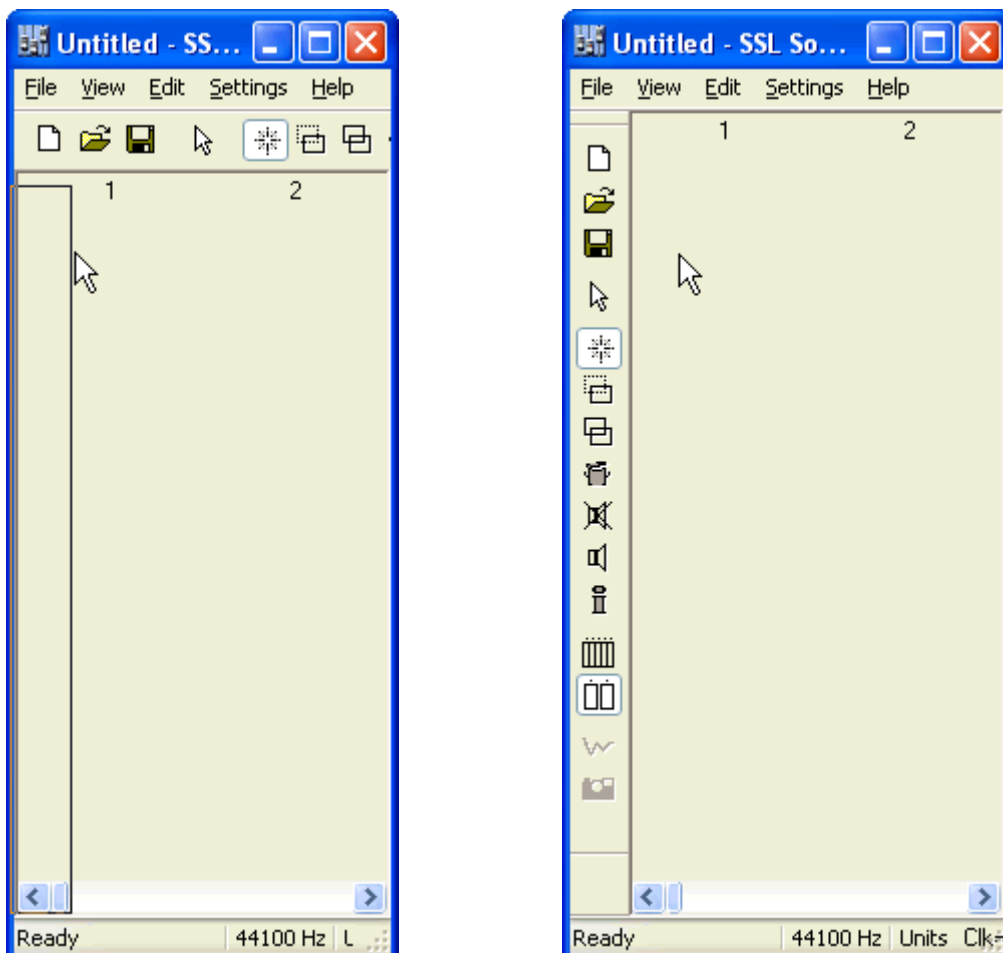
NOTE: When the mouse pointer is placed on a tool icon, a tooltip is shown near the mouse pointer and a description of that tool's function is displayed in the Status Bar at the bottom of the SSL Soundscape Mixer window:



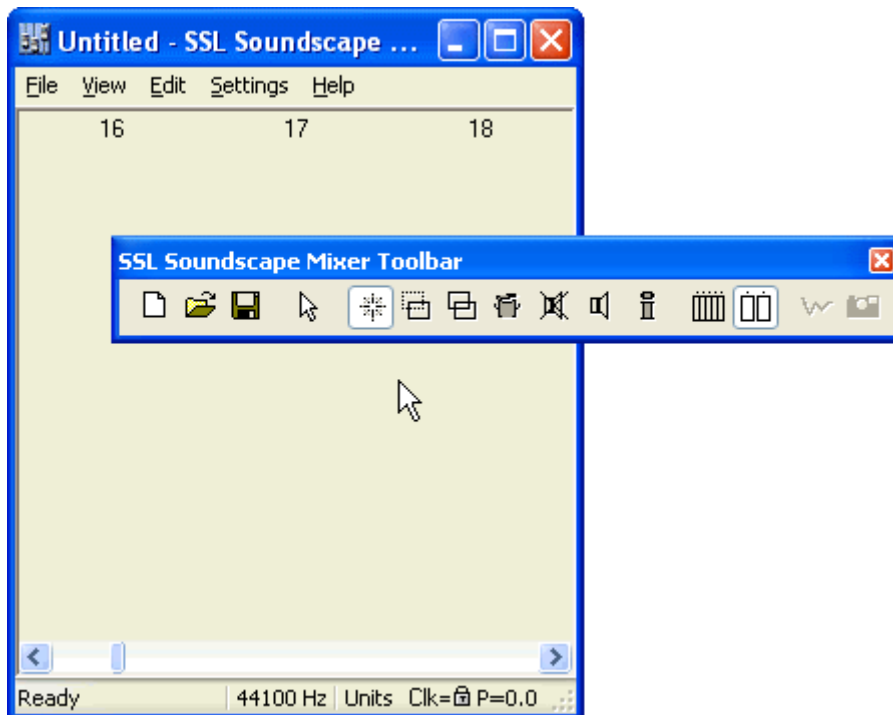
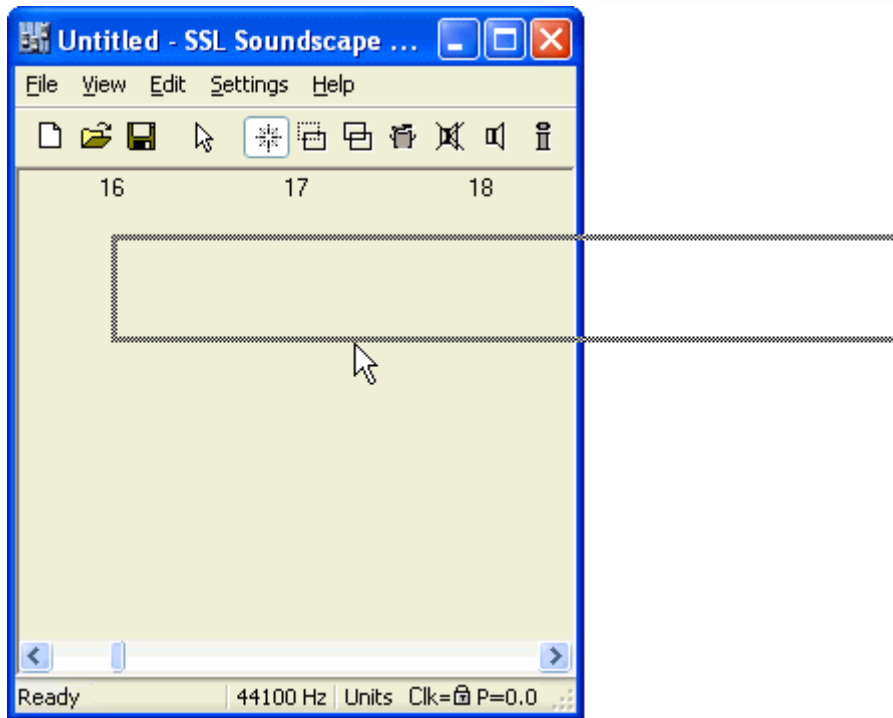
The Toolbar itself can be moved to the top, bottom, right side or left side of the SSL Soundscape Mixer window. It can also be undocked and used as a separate window which can itself be moved or resized in the normal way.

In order to undock the Toolbar or move it to a different edge of the main SSL Soundscape Mixer window, click in it (but not directly on a tool), hold the mouse button down and drag it. An outline of the Toolbar will be displayed.

Releasing the mouse button when the outline appears as a solid line will relocate the Toolbar accordingly at the top, bottom, right side or left side of the SSL Soundscape Mixer window:



Releasing the mouse button when the outline appears as a dashed line will undock the Toolbar:



To dock the Toolbar again, drag the Toolbar window back to the top, bottom, right side or left side of the main SSL Soundscape Mixer window. Release the mouse button when the outline is shown as a solid line.

DSP power limit

The “P” value reported in the Mixer window’s Status Bar is the average percentage per DSP of the available clock cycles which is required to run the SSL Soundscape Mixer at the selected Sample Rate (taking the Varispeed setting into account if applicable). The “M” value is the average percentage per DSP of the available memory resources required to run the Mixer. In most cases, if either of these values exceeds 100% when a Mixer is created, a warning message is displayed:

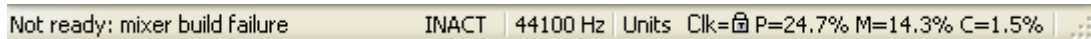


Click OK to close the dialog box.

If the “P” value only exceeds 100% for one of the DSPs, the status bar will display a processing overrun (“PO”) warning as shown below:



If the “M” value exceeds 100% or if both values exceed 100% for one of the DSPs, the Status Bar will inform you that the Mixer is inactive (“INACT”):



Muting or deleting some elements will reduce the values and reactivate the Mixer.

However, the P=xx% value is not completely accurate, because some plug-in elements report inaccurate processing cycles to the SSL Soundscape Mixer. This means that depending on what kind of elements are used, some mixers configurations can't reach or may exceed the P=100% value for one of the DSPs without the “PO” warning appearing.

If a DSP actually cannot perform as required, it will generate a processing overrun error warning (PO will be displayed in the Status Bar).

The mixer will also be temporarily muted, although this may not be noticeable if the processing overrun only lasts for a very short time. Please also read the Status Bar chapter for information on error messages.

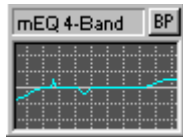
Basic principles: mixer element inputs/outputs, connecting mixer elements

Each mixer element has at least one input and one output, and some elements have many more. These individual inputs and outputs come in three categories: "fixed", "assignable", and "recorder". It is helpful to visualize them in order to understand the signal flow within a mixer column.

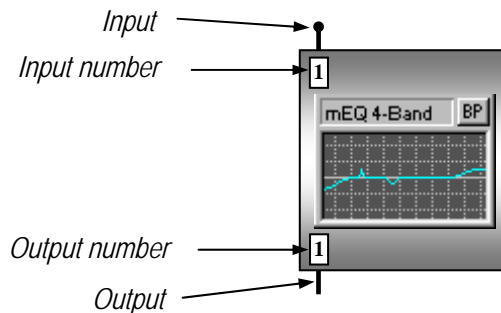
Fixed inputs/outputs

The fixed inputs and outputs connect the various mixer elements within a mixer column. In our diagrams they are indicated by numbers incremented from left to right. The examples below show a mono multi EQ mixer element, as it appears within a mixer column, and with its single input and single output represented:

Multi EQ element, mono, as seen within a mixer column.



Multi EQ element, mono, with its input and output shown.

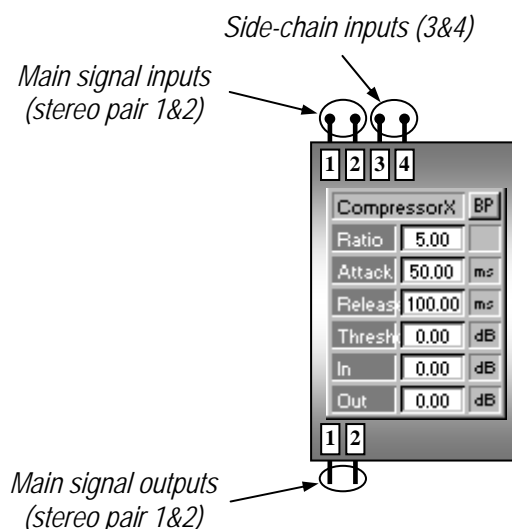


...and a stereo CompressorX mixer element with side-chain, as it appears within a mixer column, and with its four inputs and two outputs represented:

CompressorX element, stereo with side-chain, as seen within a mixer column.



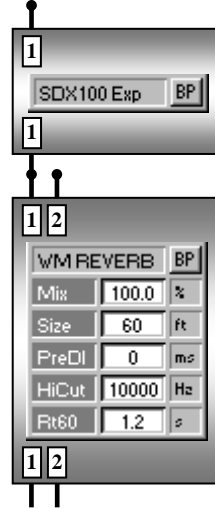
CompressorX element, stereo with side-chain, with its inputs and outputs shown.



Fixed inputs and outputs always connect to an output or input with a matching number. For instance, an element with a single mono output, (output 1), will always connect to the left side input, (input 1), of a stereo element, as shown below. This type of configuration should be avoided, because the presence of an unconnected input can create problems:

Incorrect configuration:

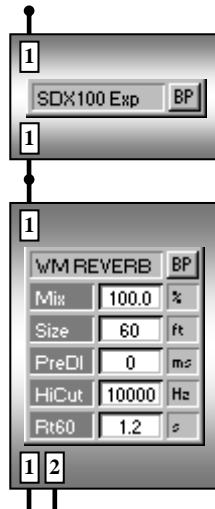
A mono mixer element (Drawmer SDX100 compressor/expander, is connected to a stereo mixer element (Wave Mechanics Reverb). Input 2 of the stereo reverb is unconnected. This could create audible problems.



...instead, a mixer element with a single output should be connected to a mixer element with a single input:

Correct configuration:

A mono mixer element (Drawmer SDX100 compressor/expander) is connected to a mono to stereo mixer element (Wave Mechanics Reverb).



It is important to take account of this when building a Mixer, because the two configurations shown above would look the same within a mixer column:



If you need to check the input/output configuration of an existing mixer element, click on it with the Element Info tool in Mixer Edit mode. A window containing the relevant information will be displayed.

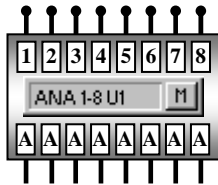
NOTE: The principles outlined in the examples above using mono, stereo and mono to stereo mixer elements also apply when dealing with mixer elements that have a higher number of inputs and outputs. For example, combining a 6 in/6 out input element and an 8 in/8 out output element within a mixer column would result in an incorrect configuration, because inputs 7 and 8 of the output element would be left unconnected.

Assignable inputs/outputs

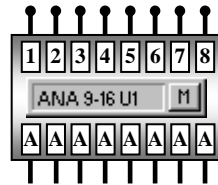
The assignable inputs and outputs connect mixer elements across mixer columns, to the external inputs and outputs of the SSL Soundscape hardware, or to the host PC via the “streams”. In our diagrams they are not numbered. Instead they are indicated by an “A”, and this means that their routing can be determined freely using the I/O and DSP Assign tool. The individual input(s) of input elements and individual output(s) of output or send element(s) are assignable in this way.

The example below shows an 8 in/8 out output element. Initially, the element’s outputs are assigned to analogue outputs 1-8. The I/O and DSP Assign tool is then used to change the element’s output assignment to analogue outputs 9-16:

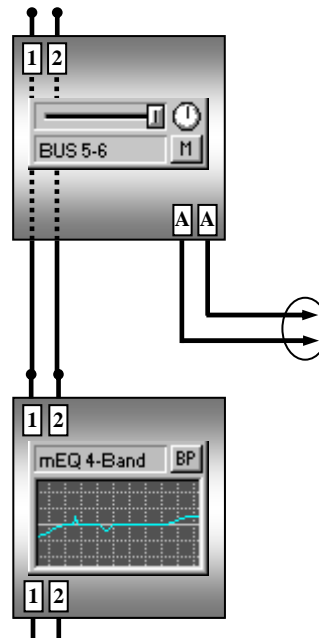
Output element, initially assigned to outputs 1-8.



Same output element, now assigned to outputs 9-16.



NOTE: As well as transmitting the audio data they receive via their assignable output(s), taking into account any volume and pan/balance settings and mute status, send elements and output elements also let the original data pass through to any element placed below them, (i.e., unaffected by these settings and regardless of mute status). In the example on the right, the data received at inputs 1 and 2 will be output via buses 5 and 6 (assignable outs shown as “A”), but the original signal will reach the multi EQ element placed below the send:



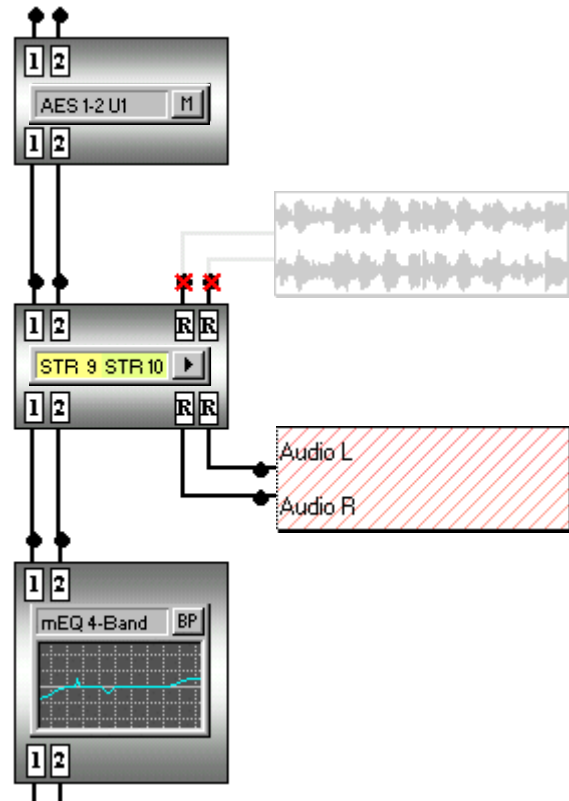
These signals will feed any assignable input(s) in the Mixer that is (are) set to BUS 5-6.

Recorder inputs/outputs

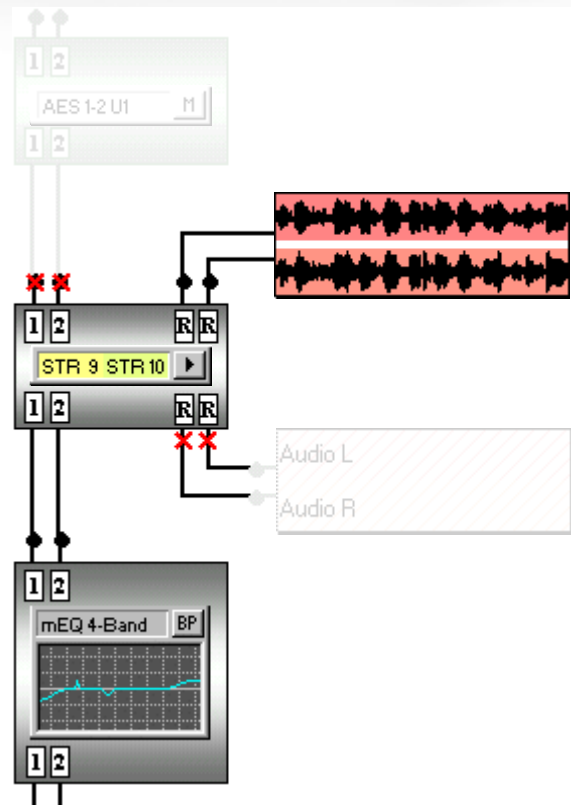
The recorder inputs and outputs are specific to the track insert elements. They are indicated by an "R" in our diagrams. The track insert elements are designed as a practical way to connect to a recording application such as an audio + MIDI sequencer. Therefore, they are assignable only to "streams" linking the SSL Soundscape Mixer to the PC and vice versa. Track insert elements are color-coded according to the stream(s) they are assigned to. The following example show a stereo track insert element assigned to streams 9 and 10:

The recorder outputs allow audio data to be sent from the SSL Soundscape Mixer to the recording application (typically an audio + MIDI sequencer). The diagram to the right shows how, in Record mode, audio data received at inputs 1 and 2 of a stereo track insert element is sent out via the recorder outputs and recorded ("Audio L and Audio R"), while the data is also sent to the multi EQ element below via fixed outputs 1 and 2 for monitoring.

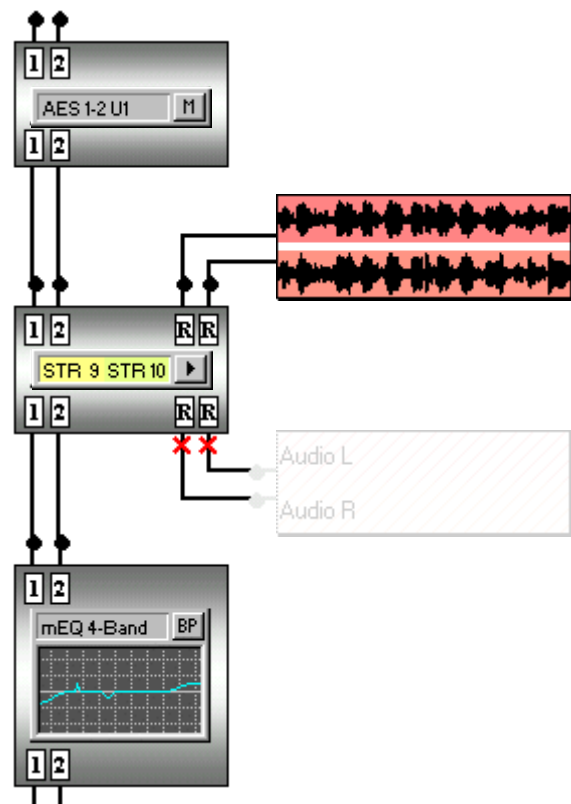
NOTE: Whether incoming audio data is passed on to the multi EQ element via the track insert element's fixed outputs 1 and 2 depends on the active/inactive status of the track insert element's "Mix input always" function. Double-clicking the track insert element calls up a dialog box where this setting can be checked and edited.



The recorder inputs allow audio data to be received from the recording application for playback. The diagram to the right shows how, when the sequencer is in Play mode, audio data received at the recorder inputs of a stereo track insert element is sent to the multi EQ element below via fixed outputs 1 and 2.



NOTE: If "Mix input always" is checked (double-clicking the track insert element calls up the relevant dialog box), audio data received via fixed inputs 1 and 2 of the track insert element, as well as audio data received via the recorder inputs of that element, will reach fixed outputs 1 and 2.



Mixer column input/output configurations

When you select the Create tool and click in an empty mixer column slot in “Mixer Edit” mode, a menu appears, prompting you to create a new mixer column. If you have several units (SSL Soundscape cards) in your system, the menu will let you choose the unit that the mixer column will be created for. Several mixer column configurations are available, always including “built-in” input and output elements. The output element always has a mute button, and may have a fader, pan or balance control, peakmeter, and solo button). An EPP (Equal Power Panning) output can be selected for stereo and mono to stereo outputs.

Various mixer column configurations are described next.

Mixer column input/output configurations using mono and stereo

For **mono in - mono out**, the signal just flows through the mixer column, only affected by the user defined settings of the various mixer elements, which should be mono.

For **stereo in - stereo out**, the respective level of the left and right signals is controlled by the balance setting (available if there is a fader). Stereo mixer elements would be inserted in the signal path as required.

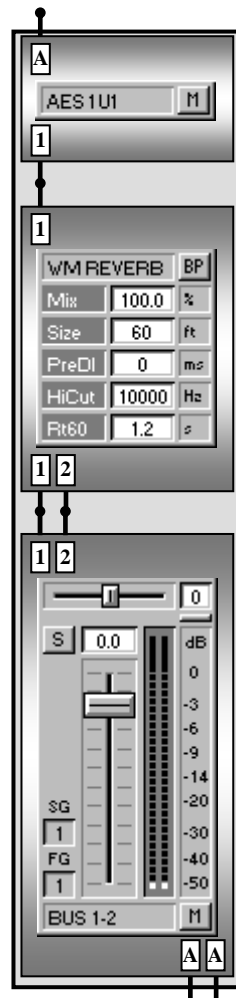
For **mono in - mono to stereo out**, the signal path through the mixer column is mono, and the signal is split into stereo at the pan control.

For **mono in - stereo out**, the input is mono, but the input signal needs to reach both inputs of a stereo output element. This mixer column configuration should only be created in order to use a stereo process or effect on a mono source (e.g., a mono to stereo chorus or reverb). In fact, if you use this configuration without inserting a mono to stereo process in the mixer column, then the input element will not be connected to input 2 of the output element, and this should be avoided as it can have undesirable effects (the right hand side channel of the output element may pick up a signal from elsewhere in the Mixer). In the example below, a mono signal reaches the mixer column via input 1. A mono to stereo reverb effect is applied. The reverb's stereo pair of outputs connects as required to the stereo output element.

A typical mono in - stereo out mixer column, as seen within the Mixer.



The same mixer column, presented as a connection diagram.

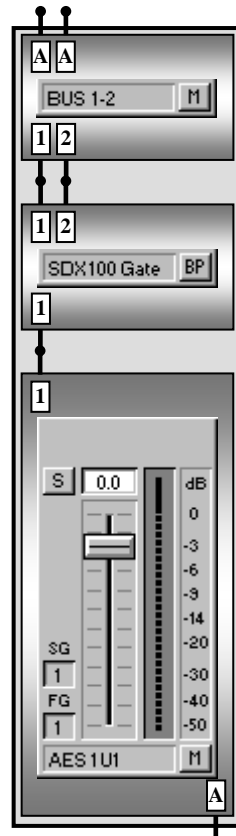


For **stereo in - mono out**, only the left side of the stereo input will be connected to the mixer column's output. This configuration can be used to insert a 2 in/1 out mixer element such as a mono compressor with side-chain input. The main signal will reach the compressor via input 1, the key signal will reach the compressor via input 2. Only the main signal will reach the compressor's single output.

A typical stereo in - mono out mixer column, as seen within the Mixer.



The same mixer column, presented as a connection diagram.

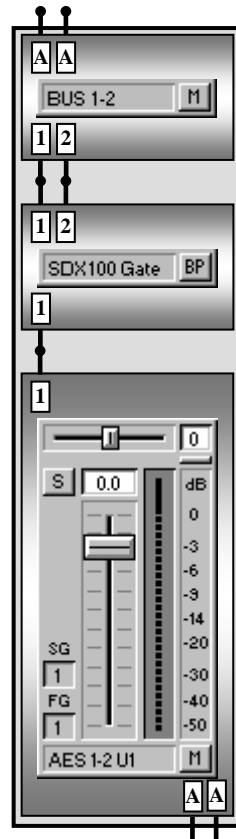


For **stereo in - mono to stereo out**, only the left side of the stereo input is connected through the mixer column, but it splits into stereo at the pan control. This configuration, just like the stereo in - mono out configuration described above, can be used to insert a 2 in/1 out mixer element such as a mono compressor with side-chain input. The only difference is that the output can be panned left or right as required with the mono to stereo output element.

A typical stereo in - mono to stereo out mixer column, as seen within the Mixer.



The same mixer column, presented as a connection diagram.



Stereo and mono to stereo outputs can be selected with Equal Power Panning (EPP menu options). In this case, when the balance or pan control is moved to one side, the level for that side is gradually increased by up to 3dB to compensate for the overall loss of power from the other side.

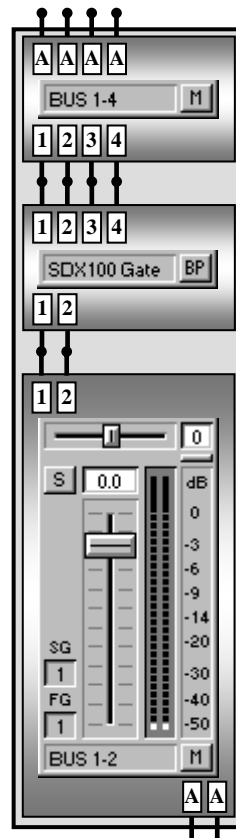
4 in - stereo out mixer columns

This configuration would be used for Dolby Surround encoding, which will be described later, and to insert a 4 in/2 out mixer element such as a stereo compressor with side-chain input (the Drawmer SDX100 was used in the example below). The main signal must reach the compressor via inputs 1-2, the key signal must reach the compressor via inputs 3-4. Only the main signal will reach the compressor's outputs.

A typical 4 in - stereo out mixer column, as seen within the Mixer.



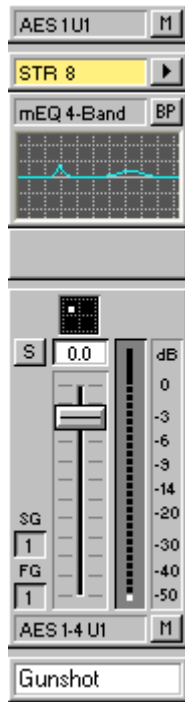
The same mixer column, presented as a connection diagram.



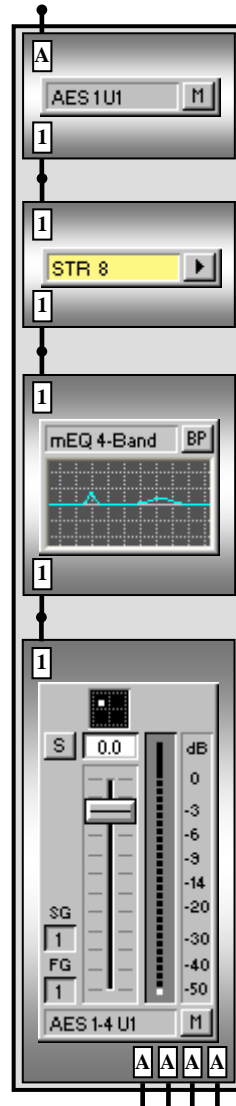
Mixer column input/output configurations for surround mixing

For **mono in - mono to LRCS out**, the signal path through the mixer column is mono, allowing mono processes or effects to be applied to the signal, (such as the mono multi EQ in the example below), before it is positioned in the soundfield using the surround panner.

A mono in - mono to LRCS out mixer column, as seen within the Mixer.

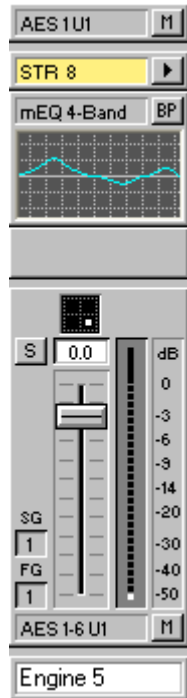


The same mixer column, presented as a connection diagram.

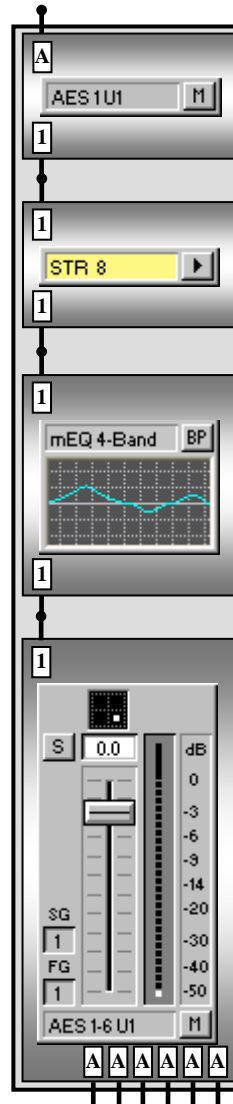


The **mono in - mono to 5.1 out** configuration is similar to the **mono in - mono to LRCS out** configuration, except that the output element has six individual outputs for L, R, C, LFE, Ls and Rs.

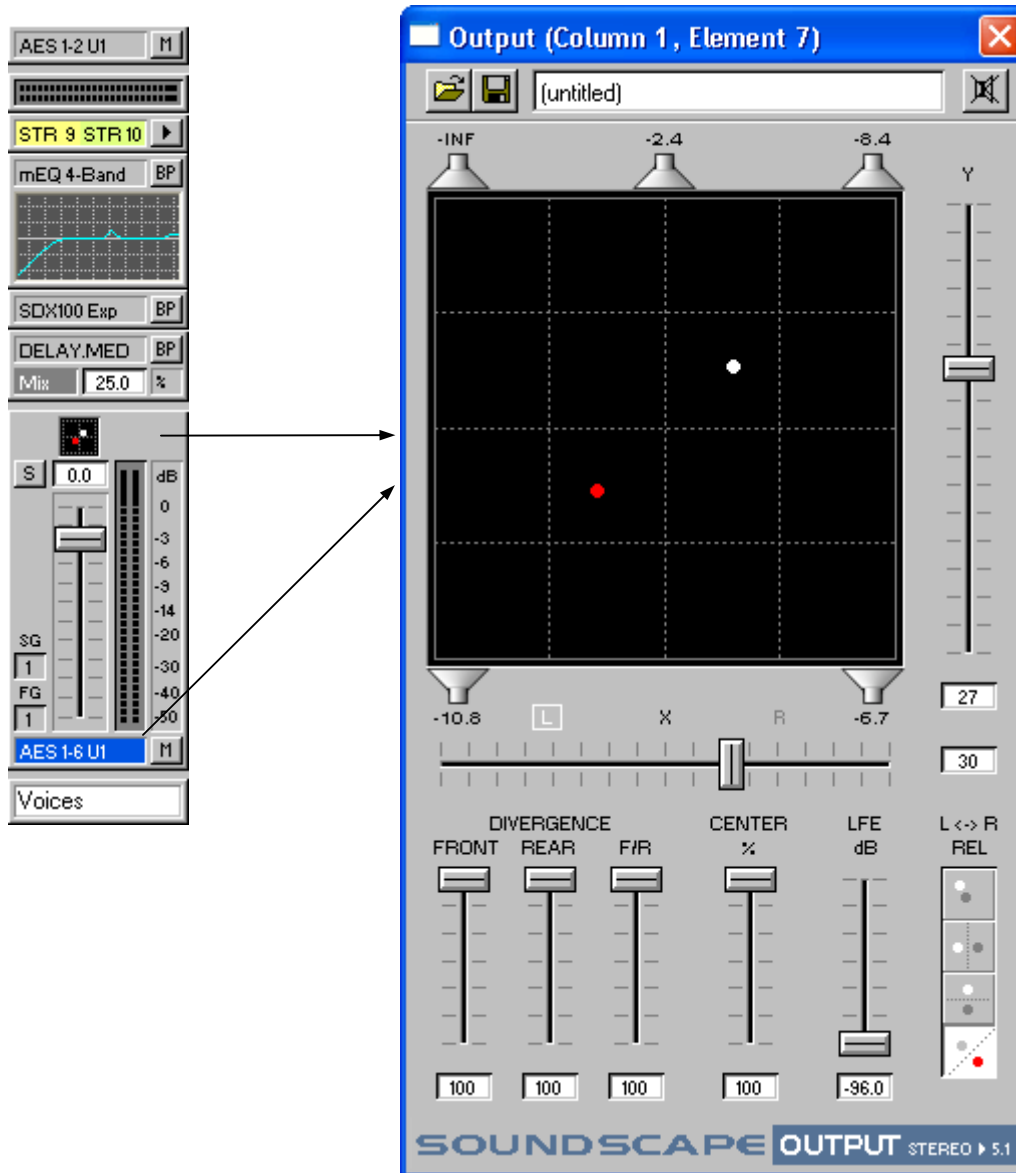
A mono in - mono to 5.1 out mixer column, as seen within the Mixer.



The same mixer column, presented as a connection diagram.



For mixer columns with a **mono** or **stereo** to **LRCS** or **5.1** output, double-clicking the output element just next to the small surround panner, or in the output assignment box will open the Surround Panner window:



The panner features individual pan dots for the Left (white or mono) and Right (red, stereo panner only) input signal(s). These dots can be moved across the soundfield using the left and right mouse buttons respectively, by clicking and dragging or by clicking at the required position in the soundfield. The pan dots can be moved either in the small panner in the mixer column or in the large panner window. In the large window, it is also possible to use the X and Y sliders, or the X and Y value boxes. For surround panners with a stereo input, L and R buttons, positioned above the X fader, indicate whether the Left or Right signal panning is currently controlled by the X and Y faders.

The Front, Rear and F/R (Front/Rear) divergence controls allow the sound to blend gradually, respectively between the front speakers (as if the front speakers were brought closer to each other), rear speakers (as if the rear speakers were brought closer to each other) or front and rear speakers (as if the all speakers were brought closer to each other). Higher values create more separation.

The Center Speaker control allows center panned sound to be gradually spread across the left and right front speakers.

The LFE (dB) level control (for 5.1 output panners only) determines the level of the signal routed to the LFE channel (pre output fader). Clicking the "LFE dB" label will mute/unmute the LFE output channel.

***NOTE:** The panning mode is always "equal power", regardless of panning position, divergence or center speaker control settings. Muted speakers are not taken into account though!*

For the X, Y, Divergence, Center and LFE controls:

- The sliders can be moved either by clicking and dragging them or by clicking at the required position with the mouse.
- Right-clicking or left-clicking in a value box respectively increases or decreases the corresponding value in steps of 1. Right-clicking or left-clicking in the selection box and holding the mouse button down increases or decreases the value continuously. The other mouse button can then be held down as well to speed up the process even more.

Clicking a speaker icon mutes/unmutes the corresponding speaker output.

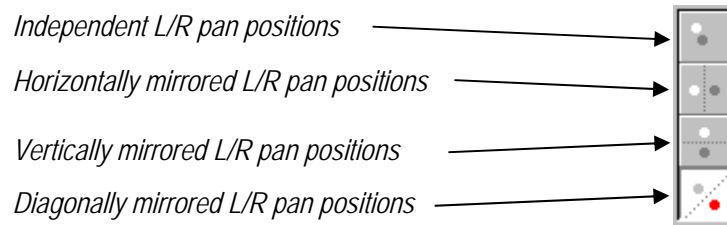
Right-clicking a speaker icon solos/unsolos the corresponding speaker output.

The output level for each speaker is displayed in dB.

For stereo to LRCS and stereo to 5.1 output panners only:

- Left (L) and Right (R) buttons (positioned above the X pan fader) can be used to link the X and Y pan faders to either pan dot.

– Four "L <-> R Pan Relation mode" buttons allow the pan dot positions to be controlled independently, or allow the dots to be linked so that their positions are automatically mirrored horizontally, vertically or diagonally when moving either pan dot.



NOTE: The output routing of the mono to LRCS and stereo to LRCS output panners is Left, Right, Center, Surround, so that the left and right signals are on adjacent buses or outputs, in case just the stereo signal is required. The outputs would be routed to four full bandwidth speakers, three across the front (L, C and R), and a rear surround speaker (S). Similarly, the output routing of the mono to 5.1 and stereo to 5.1 output panners is Left, Right, Center, LFE, Left surround, Right surround. For instance, if the output element is assigned to AES 1-6 U1, the output routing would be: L > AES 1 U1, R > AES 2 U1, C > AES 3 U1, LFE > AES 4 U1, Ls > AES 5 U1, Rs > AES 6 U1.

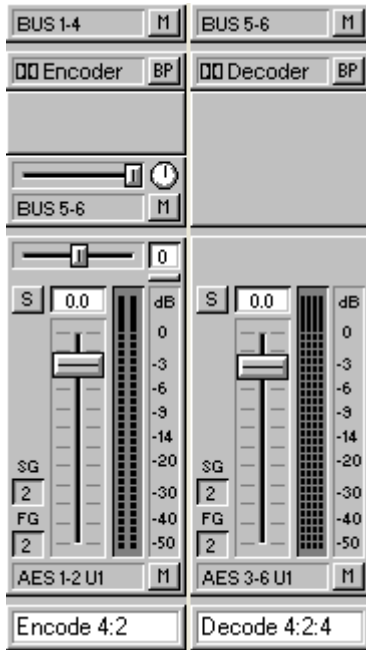
Mixer column input/output configurations for Dolby Encoding and Decoding

The **4 channel in - stereo out** configuration would typically be used for the Dolby Surround Encoder plug-in element, which encodes the LCRS signal into stereo, while the **stereo in - 4 channel out** configuration would typically be used for the Dolby Surround Decoder plug-in element, which decodes the encoded stereo signal back into LCRS.

These configurations allow full monitoring of the end result (encoding then decoding) in a classic 4:2:4 mix situation; i.e., you can listen to the effect of the encoding and decoding process — this is important as the process is not perfect and can affect the audio.

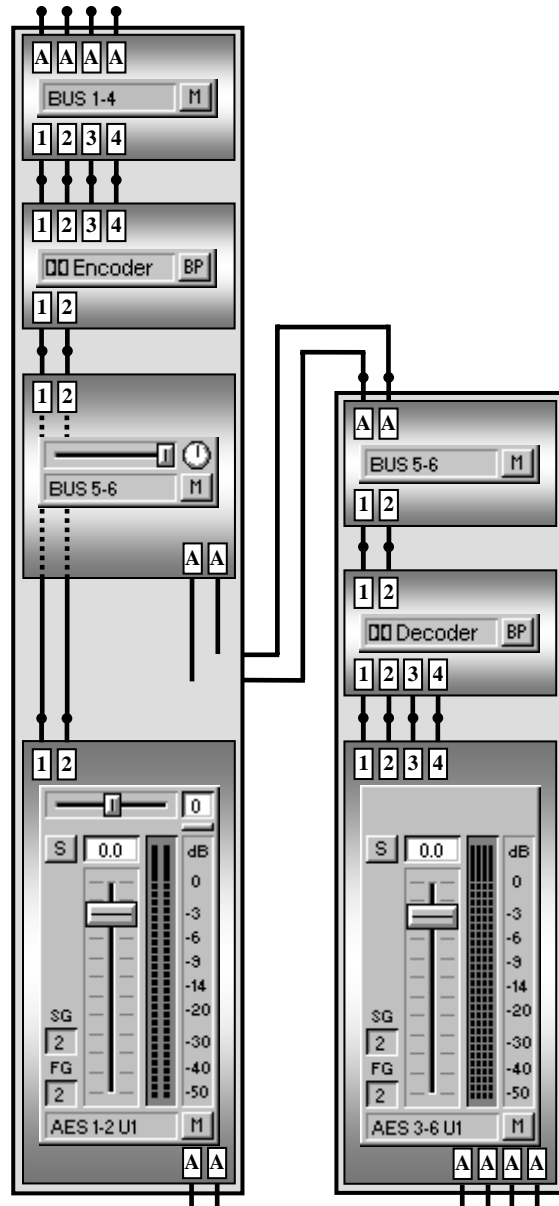
There is an example of this type of Mixer in the files installed with the SSL Soundscape Mixer. The file is called "Dolby Encode-Decode 16 Channel.Mix" and should be found in the C:\Soundscape\Mix\sslMixer folder. The mixer columns in the example below are copied from columns 17 and 18 of that Mixer.

A pair of mixer columns configured for Dolby encoding/decoding



A send element in the first mixer column sends the stereo signal to the second column via buses 5 and 6 for decoding.

The same pair of mixer columns, presented as a connection diagram.



NOTE: The Dolby Surround process uses matrix encoding to combine 4 channels, (Left, Center, Right and Surround) into a mono and stereo compatible stereo signal. This can be decoded by a Dolby Surround Decoder (also known as a Dolby Pro Logic Decoder for consumer devices like HIFI systems and VCRs), of which there are several tens of millions in homes around the world. The Dolby encoded signal can also be played correctly on a stereo or mono system.

Other mixer column input/output configurations

In addition to all the above, mixer column can also be created with 4, 6 or 8 inputs and outputs. These can be used for example to handle receive multitrack submixes via ADAT or AES/EBU ports.

Input and output selection

Each mixer column has at least one (built-in) user selectable input and output and may have any number of send elements. These can be set to use any of the physical inputs and outputs, internal mixer buses or PC audio streams. In Mixer Edit mode, selecting the I/O and DSP Assign tool and clicking the input, output or send element will call up a menu showing all the possible routing options. The example below show the selection menu for a 6 channel input element with an XLogic Alpha-Link MADI SX connected to the SSL Soundscape Mixpander that the mixer column is running on:

✓ AES 1-8 U1	ANA 9-16 U1	MADI 17-24 U1	MADI 49-56 U1	BUS 1-8	STR 1-8	STR 33-40
AES 3-10 U1	ANA 11-18 U1	MADI 19-26 U1	MADI 51-58 U1	BUS 3-10	STR 3-10	STR 35-42
AES 5-12 U1	ANA 13-20 U1	MADI 21-28 U1	MADI 53-60 U1	BUS 5-12	STR 5-12	STR 37-44
AES 7-14 U1	ANA 15-22 U1	MADI 23-30 U1	MADI 55-62 U1	BUS 7-14	STR 7-14	STR 39-46
AES 9-16 U1	ANA 17-24 U1	MADI 25-32 U1	MADI 57-64 U1	BUS 9-16	STR 9-16	STR 41-48
AES 11-18 U1	ANA 19-MADI 2 U1	MADI 27-34 U1		BUS 11-18	STR 11-18	STR 43-50
AES 13-20 U1	ANA 21-MADI 4 U1	MADI 29-36 U1		BUS 13-20	STR 13-20	STR 45-52
AES 15-22 U1	ANA 23-MADI 6 U1	MADI 31-38 U1		BUS 15-22	STR 15-22	STR 47-54
AES 17-24 U1	MADI 1-8 U1	MADI 33-40 U1		BUS 17-24	STR 17-24	STR 49-56
AES 19-ANA 2 U1	MADI 3-10 U1	MADI 35-42 U1		BUS 19-26	STR 19-26	STR 51-58
AES 21-ANA 4 U1	MADI 5-12 U1	MADI 37-44 U1		BUS 21-28	STR 21-28	STR 53-60
AES 23-ANA 6 U1	MADI 7-14 U1	MADI 39-46 U1		BUS 23-30	STR 23-30	STR 55-62
ANA 1-8 U1	MADI 9-16 U1	MADI 41-48 U1		BUS 25-32	STR 25-32	STR 57-64
ANA 3-10 U1	MADI 11-18 U1	MADI 43-50 U1		BUS 27-34	STR 27-34	
ANA 5-12 U1	MADI 13-20 U1	MADI 45-52 U1		BUS 29-36	STR 29-36	
ANA 7-14 U1	MADI 15-22 U1	MADI 47-54 U1			STR 31-38	

There are no restrictions to how you can use the inputs, outputs, buses or streams, and every signal routed to an output or bus is mixed in equal proportion (after the output or send fader). For instance, you could have 8 stereo mixer columns with inputs ANA 1-2 U1 (or BUS 1-2) as their input, and BUS 3-4 as the output routing. You could then use different EQ settings to split the signal, process it with different effects (e.g., for a multiband compressor) and recombine the signals at BUS 3-4. You could even select the same bus as the input and output of a mixer column, but be careful as you can have digital feedback this way!

***NOTE:** If the output(s) from several mixer columns are sent directly to an external output (or group of outputs), it is not possible to view the combined output signal in order to check for overload. Therefore, it is advisable instead to route the mixer column outputs to a bus, and then to create an additional mixer column which has that bus as its input. This mixer column should have a fader with peakmeter, for monitoring the combined signal, and its output(s) can be routed to the required external output(s). This also provides a master fader for the combined signal.*

NOTE: The front panel routing matrix of the XLogic Alpha-Link unit is deactivated when the Alpha-Link is used with a Mixpander and the SSL Soundscape Mixer.

Input and output availability

If the active Mixer file references inputs or outputs that are currently not available on the SSL Soundscape hardware, the corresponding input or output labeling is displayed in red. This may happen for instance if a Mixer referencing the MADI inputs or outputs of an Alpha-Link MADI-AX is loaded in a system that uses an Alpha-Link AX.



Mixer element inputs or outputs that cannot be routed to the Alpha-Link due to the restricted number of expansion bus channels (64) are labeled in orange.



Understanding the signal path

The following diagram shows an exploded view of a possible routing which includes an external multi-effects unit connected to an SSL Soundscape Mixpander via a pair of analogue inputs of the Xlogic Alpha-Link.

Mixer column 1 (Drums) has its input muted so that the signal starts with recorded tracks 1-2, received from an audio sequencer via track insert 7-8.

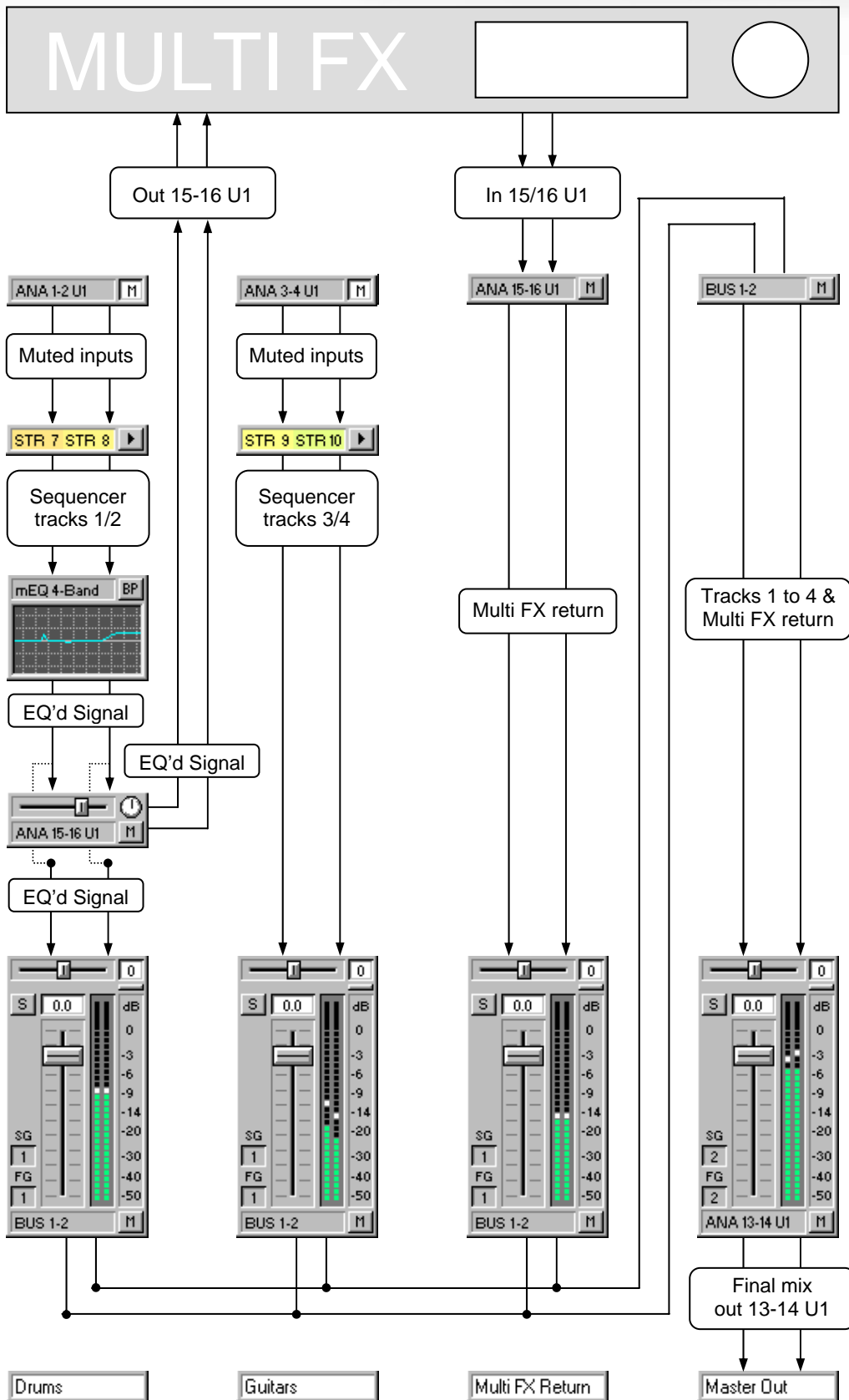
The signal is equalized with the multi EQ plug-in, before it is sent to analogue outputs 15-16 for external processing by the multi-effects unit (connected to the Alpha-Link in a send/return loop configuration).

The dry, equalized signal carries on through the stereo peakmeter and fader and is sent out to the stereo BUS 1-2.

In BUS 1-2, the dry signal is combined with the signal from tracks 3-4, received from the audio sequencer via track insert 9-10, and with the return from the external multi-effects unit, which arrives via the Alpha-Link's analogue inputs 15-16.

As the Master Out mixer column has BUS 1-2 as its input, all the signals arrive mixed and the fader becomes the master fader.

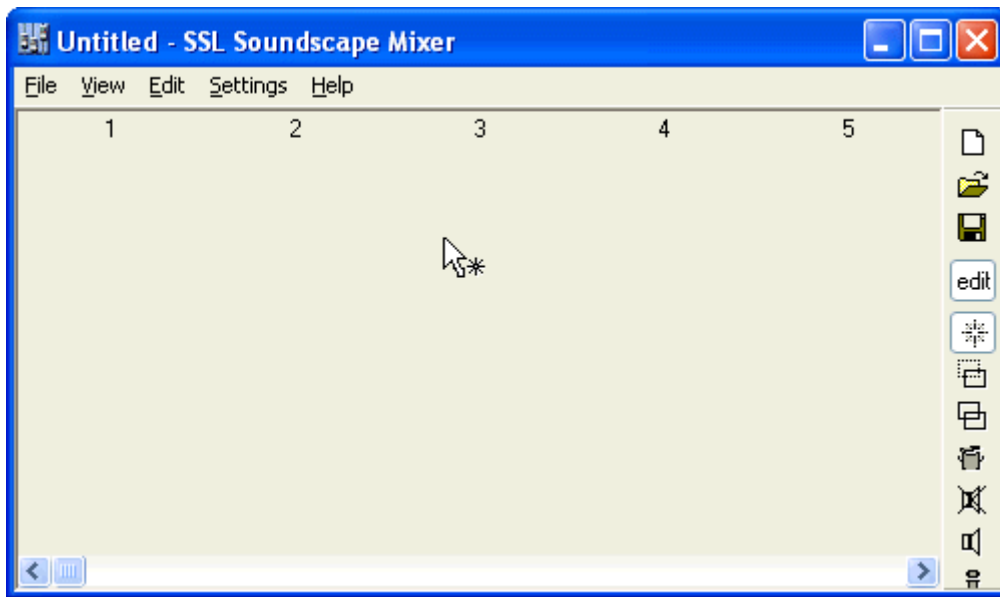
The signal is then sent to an external stereo recorder via the analogue outputs 13 and 14 (ANA 13-14 U1) of the Alpha-Link unit.



Step by step mixer column

To fully understand the mixer creation process, it can be useful to think of a particular mixer column configuration, then set out to create it. You can follow this step by step example to create a stereo mixer column with a stereo track insert assigned to streams 9-10 and a 4 band multi EQ.

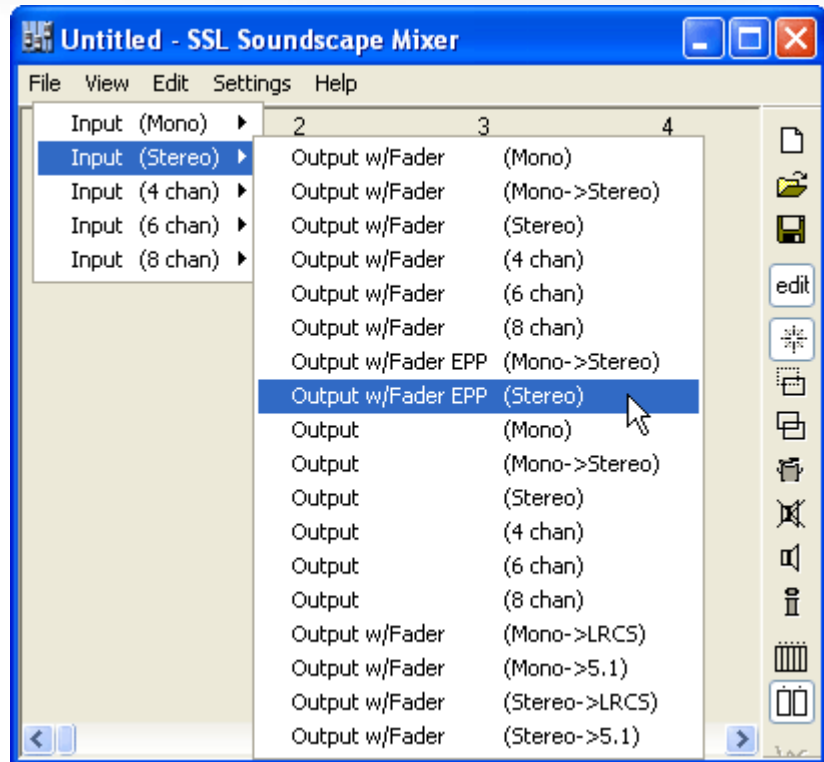
1. Click “New” under the File menu. A completely blank mixer will appear, in Mixer Edit mode, as pictured below (this procedure, and the Mixer Edit mode have been described in the “Creating/Editing a Mixer” section of this chapter).



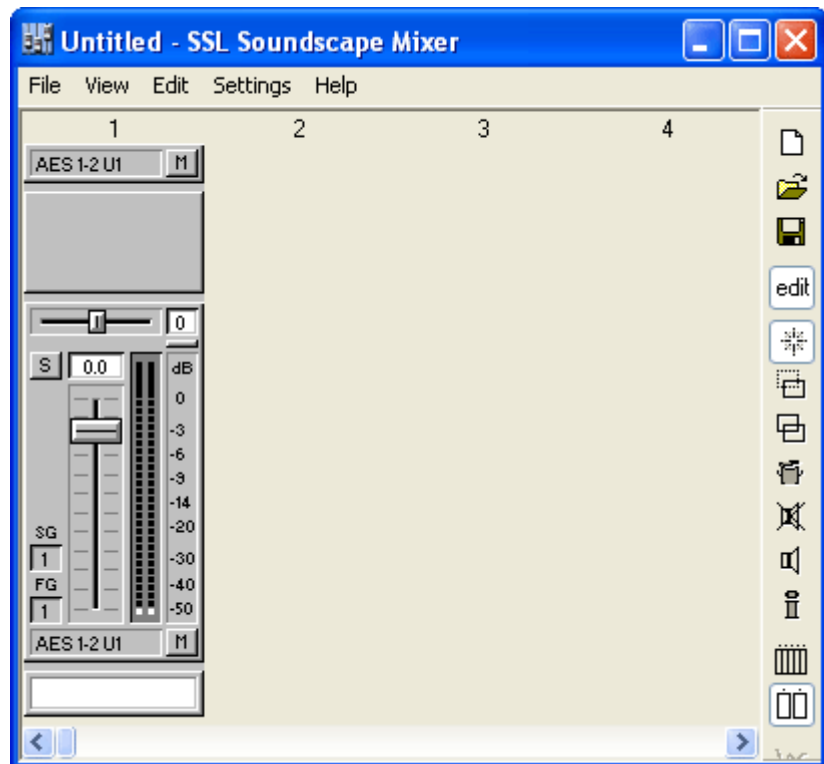
2. Select the Create tool by clicking its icon with the mouse:



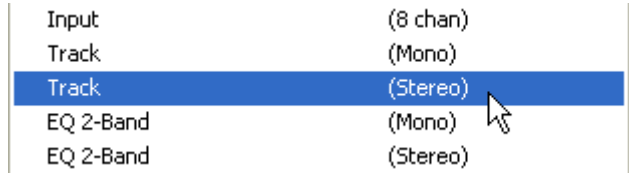
3. Click in a vertical mixer column slot with the Create tool, hold the mouse button down, select the required type of mixer column and release the mouse button. In this example we have opted for Stereo Input/Stereo Output with Fader and Equal Power Panning in mixer column slot 1:



4. A mixer column will appear with the default inputs and outputs (AES 1-2 U1 in this example, depending on the Alpha-Link model being used), a balance control slider with center button, a pre-fader stereo peakmeter, input and output mute buttons, a solo button and a fader. There is also a blank space at the bottom of the mixer column that can be used to name it. (All these mixer controls have been described earlier in this chapter).

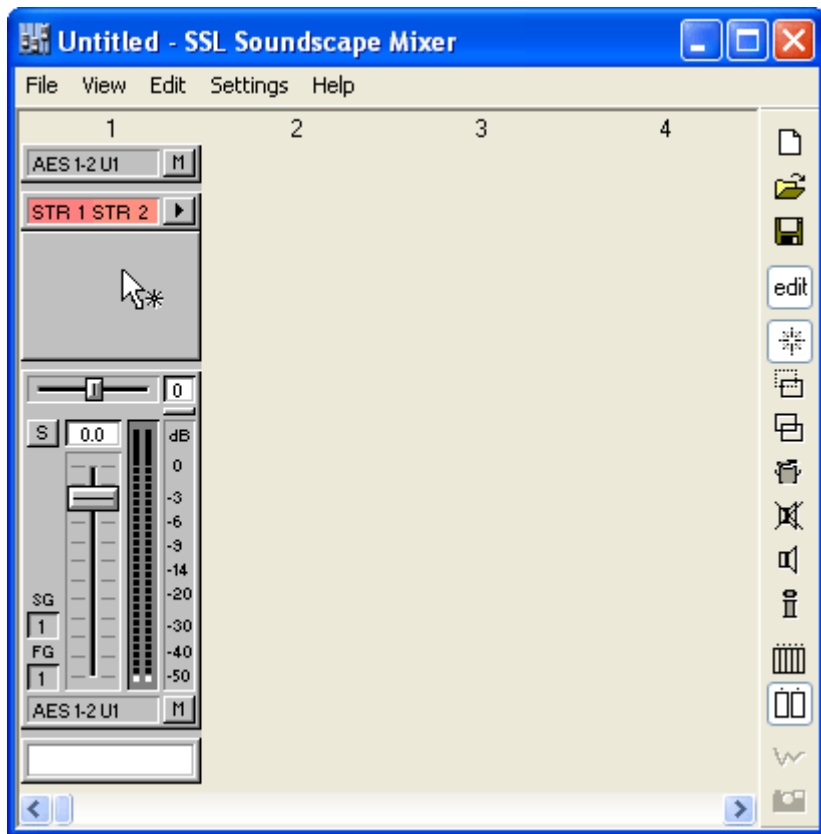


5. Still using the Create tool, click anywhere within the blank area of the mixer column. A menu will appear where all available mixer elements are listed and can be selected. Select “Track (Stereo)” and release the mouse button to create a stereo track insert:



NOTE: The available mixer elements listed in the menu vary depending on what optional plug-ins are installed on your system, so the menu may not look exactly like the one in this example. However the mixer elements used here are available as standard. If you have a lot of optional plug-ins installed, you may need to scroll the menu by holding the mouse pointer over the arrow at the top or bottom of the menu.

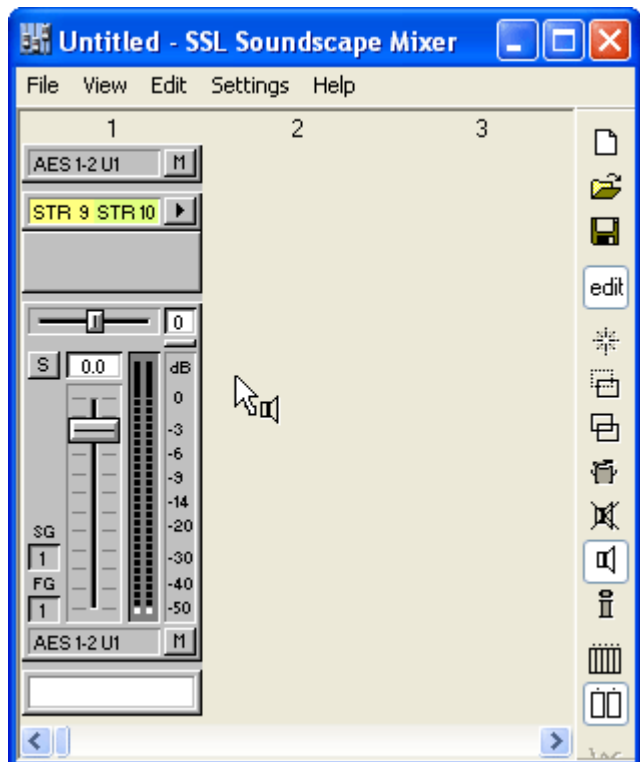
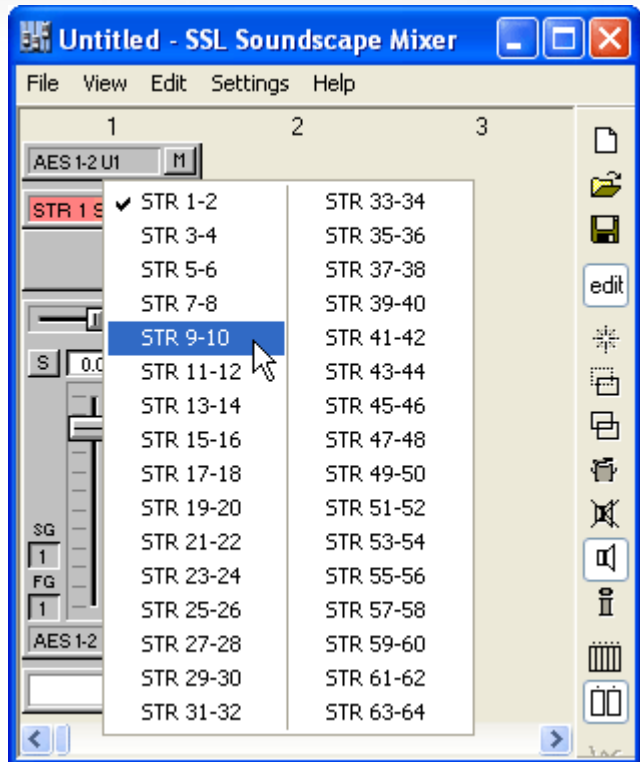
The default streams for a new track insert are always the lowest numbered ones available. In our example, streams 1-2:



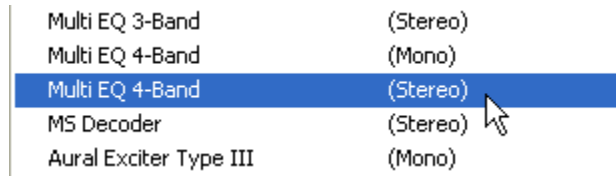
6. We had set out to create a track insert assigned to streams 9-10. Therefore, we need to modify the track insert assignment. Select the I/O and DSP Assign tool (which is used for modifying elements or routing) by clicking its icon...:



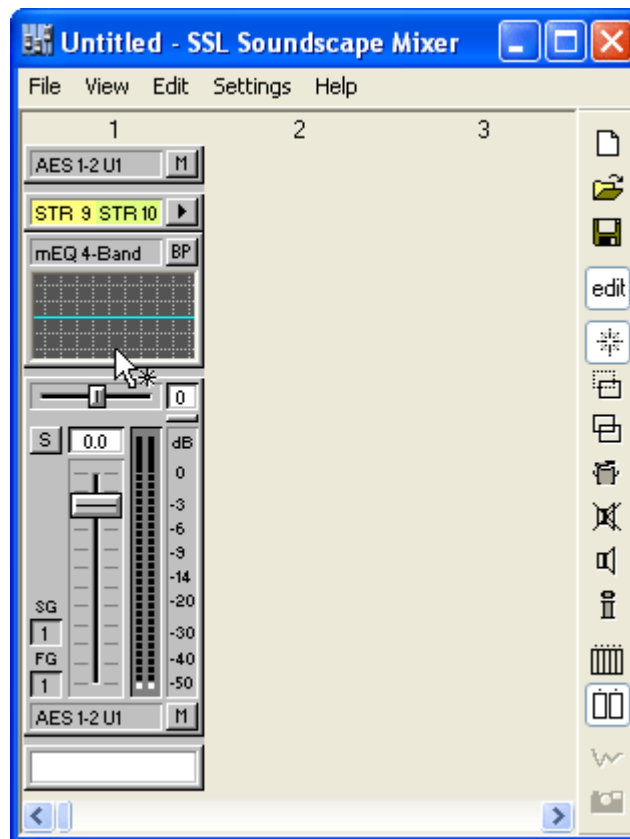
...and click on the track insert element. A menu will appear listing all the possible stereo stream pairs. Select the "STR 9-10" pair and release the mouse button:



7. Next, select the Create tool again, click in the blank area of the mixer column under the track insert. The mixer elements menu that you used to create the track insert will appear again. This time, select “multi EQ 4-Band (Stereo)”, then release the mouse button:



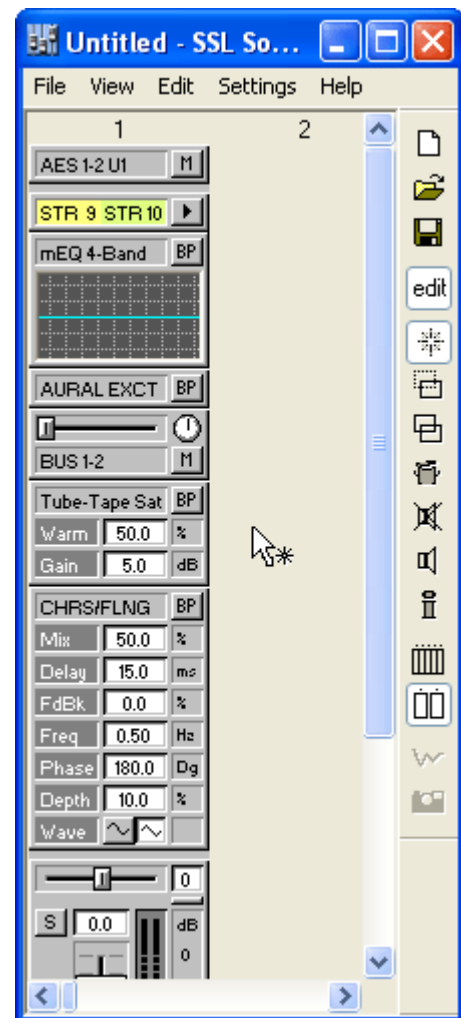
The multi EQ module will now be displayed under the stereo track insert:



8. The required mixer column has now been created. While you are in Mixer Edit mode, please take some time to experiment with the other tools. It is possible to move or copy any mixer element within a mixer column using the Move or Copy tool. It is also possible to move or copy an entire mixer column to another mixer column slot. If the destination slot is already occupied by a mixer column, that mixer column and any other mixer columns to its right will automatically be shifted to the right to make room as necessary. Clicking on the input or output element with the I/O and DSP Assign tool will allow you to select a different input source or output destination. With the Delete tool, you can delete any mixer element or column by clicking on it. Clicking on most mixer elements with the Element Info tool will display information about them and allow you to edit certain automation parameters. Please read the “Control Surfaces and Automation” chapter for more details.

Placing mixer elements in the mixer column

Clicking with the Create tool in an existing mixer column calls up a menu which lists all the mixer elements available for insertion. The selected element gets created as soon as the mouse button is released. If you have followed the step by step mixer column creation procedure described in the previous section, you are already familiar with this menu. There is no limit to the number of elements that can be inserted in a mixer column (within the extent of available DSP power). If you insert so many elements that the mixer column cannot be fully displayed in the SSL Soundscape Mixer window, a vertical scrollbar will appear. It’s also possible to resize the window. Even if there seems to be no space left in the mixer column, existing mixer elements will automatically be moved to make space for a new one at the point where you click. This example shows the top part of a mixer column that contains a stereo track insert, a 4-Band multi EQ, an Aphex Aural Exciter, a send element, an Arboretum Hyperprism Tube/Tape Saturator and a Chorus/Flanger. The window has not been resized while these plug-in elements were inserted, therefore a vertical scrollbar can be seen on the right of the SSL Soundscape Mixer window.



Signal routing in the mixer column

The signal routing is always from the top to the bottom of a mixer column. For instance, if you place a track insert below an EQ, this is the position at which audio will be recorded or played

back (i.e., if an audio sequencer records from this particular track insert, it will record the equalized signal).

Using the internal buses

The Mixer has a number of internal digital buses for each SSL Soundscape Mixpander installed in the host computer. These can be used to distribute or group signals that are to be sent to an internal effects processor or a master fader. Any output or send element can be routed to a bus and the input for any mixer column can also be a bus instead of an external input. The same bus can be the input for as many mixer columns as required, allowing easy signal distribution in the Mixer.

Standard plug-in mixer elements

All the mixer elements which can be inserted in a mixer column could be described as “plug-ins”. The essential principle is the same, whether they are standard elements included in the SSL Soundscape Mixer software or optional plug-ins, in many cases developed by third party companies: any element can be inserted freely anywhere in the Mixer, before or after any other element. The following sections in this chapter describe the standard mixer elements. Optional plug-ins are normally supplied with their own manual in electronic or printed form.

***NOTE:** To use the various mixer elements, the Mixer Control mode must be used. To switch from Mixer Edit mode to Mixer Control mode, click on the Mix Control/Edit Toggle button in the toolbar. This procedure has also been described in the “Creating/Editing a Mixer” section of this chapter.*

Using the various mixer elements is straightforward. Some general guidelines that are valid for most mixer elements are provided below:

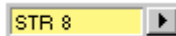
- Faders and sliders can be moved by clicking and dragging them with the mouse. Alternatively, clicking at the required position will cause the fader or slider to jump to that position.
- Pots (e.g., the pan or balance pot for a send element) can be moved by clicking and dragging them with the mouse. Once a pot has been “grabbed”, the distance between mouse pointer and pot determines the resolution of the pot’s response. Finer adjustments become possible as the distance is increased.
- Double-clicking on certain faders and pots opens dialog boxes where the required value can be entered (e.g., the send elements’ faders, pan, or balance pots, and the fader elements).
- Values displayed in value boxes can generally be edited with the mouse buttons: right-clicking or left-clicking once in a value box respectively increases or decreases the corresponding value by one increment. Right-clicking or left-clicking in the selection box and holding the mouse button

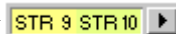
down increases or decreases the value continuously. The other mouse button can then be held down as well to speed up the process even more.

- Double-clicking in a value box often calls up a dialog box where the required value can be entered using the computer keyboard.
- Buttons (Bypass, Mute, Solo, etc.) respond to mouse-clicks. In some cases right-clicking them gives access to some extra functions (e.g., the “On” buttons in the multi EQ window).
- “Nodes” can be clicked and dragged with the mouse, for example to shape an EQ curve in the multi EQ window, or to place a sound in a surround panner sound field window.
- Standard Windows option boxes and check boxes are sometimes provided to select or activate/deactivate certain functions (e.g., to select rectangular or triangular dithering and activate or deactivate noise shaping in the dither element dialog box from the Audio Toolbox).
- Some mixer elements have a name field in their main window and load/save buttons which open standard Windows load/save dialog boxes.

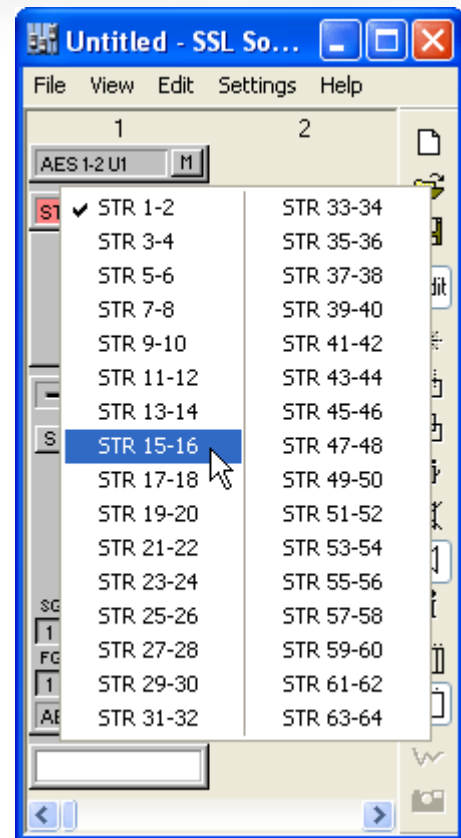
Track inserts

The track insert elements are designed as a practical way to connect to a recording application such as an audio + MIDI sequencer for recording and playback. They are available in mono and stereo versions and assignable only to the “streams” that link the SSL Soundscape Mixer to the PC and vice versa. They are colour-coded according to the stream(s) they are assigned to. Track inserts can be placed anywhere in a mixer column and you can place more than one track insert for each track or stereo pair of tracks, in order to easily change the insert point for playback or recording, by activating or deactivating either using the Mute tool (in Mixer Edit mode).

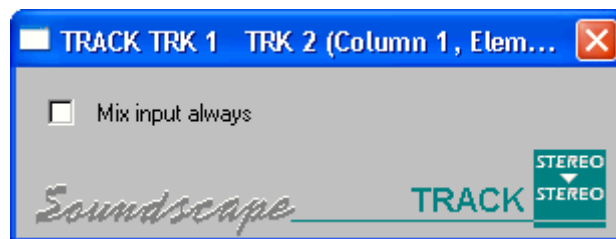
Mono track insert → 

Stereo track insert → 

Clicking a track insert element with the I/O and DSP Assign tool (in Mixer Edit mode) calls up a menu which can be used to change its stream assignment:



Double-clicking a track insert element (in Mixer Control mode) opens the following dialog box:



Checking or unchecking the "Mix input always" box determines whether the signal received at the input of the mixer column will be mixed with the signal received via the track insert.

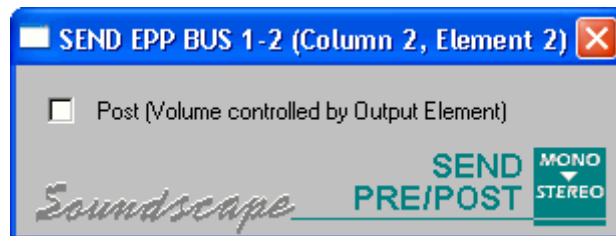
If "Mix input always" is selected (box checked), the input signal is mixed with the track output at all times, so that you can always monitor the input. In this mode however you have to remember to mute the input when mixing your recorded tracks, otherwise any noise at the mixer column's input from external signals will be included in the mix. If you place several track inserts in the same mixer column, you should select this option, so that all tracks are mixed together.

Sends

Several types of send elements are available: mono, stereo (with a balance control), mono to stereo (with a pan control), with or without Equal Power Panning. Any number of sends can be inserted anywhere in a mixer column as required. Any internal bus, external output or stream can be selected as the send destination using the I/O and DSP Assign tool (in Mixer Edit mode). All send elements have a mute button:



Double-clicking a send element opens the following dialog box:



Pre-fader sends (box unchecked) do not respond to changes made to output element settings, regardless of the output element's position in the mixer column.

Post-fader sends (box checked) respond to changes made to the fader, mute button and solo button settings of all outputs placed below them, except where these outputs are separated from the send element by an input element.

If you want to use a send element as an auxiliary send to an external effects units, set the routing of that send element (using the I/O and DSP Assign tool in Mixer Edit mode) to the required external output(s). The effected signal can be returned via an input element within the same mixer column (placed after the send or a feedback loop will be created!), or to another mixer column altogether.

If you want to use a send element as an auxiliary send to an internal plug-in effect, you can route the send to a bus, create a new mixer column which has that bus as its input, and insert the required plug-in effect in the new mixer column.

***NOTE:** As well as sending a duplicate of the signal to the selected destination, a send element also passes the original signal through to the next element below it in the mixer column where it is inserted.*

EQ 2-band

The 2-band EQs are fully parametric, allowing band pass or notch filters with variable Q (bandwidth), cut and boost and center frequency. You can place as many EQs as you need in a mixer column and all will be active simultaneously.

If you are interested in the technical definition of Q, it comes from the parameter that is used to specify the Quality Factor (Q) of an inductor (coil), that in a passive filter determines how selective (narrow) the filter is. High Q means high quality and therefore a narrow filter. The Q factor value is calculated by dividing the center frequency by the bandwidth of the filter. If you are used to using “octaves” instead of Q for setting an EQ, then as the “octave” value is the bandwidth of the filter compared to the center frequency, “2 octaves” means that the bandwidth is twice the center frequency and hence it has a Q of 0.5.

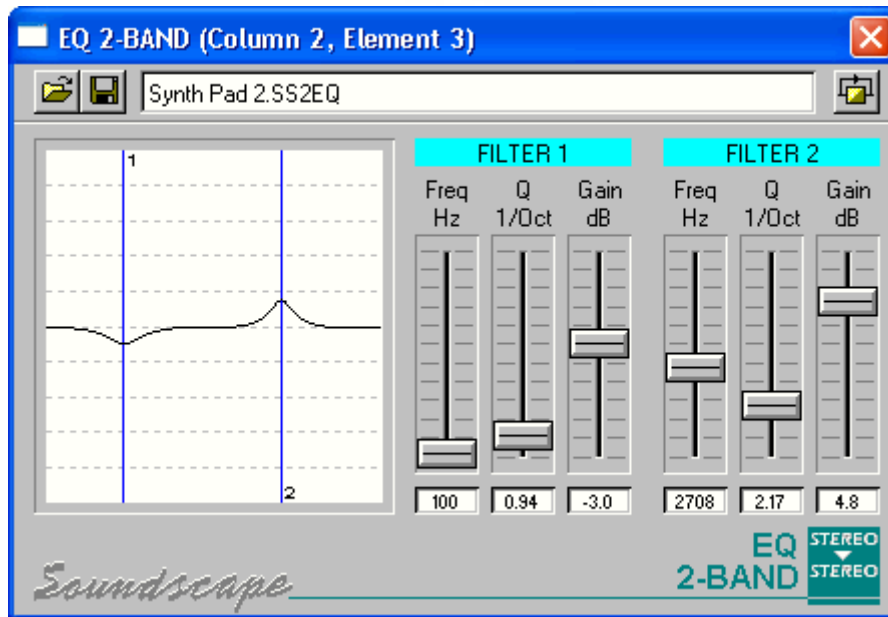
The EQ parameters can be adjusted in real-time by using the mouse buttons in the EQ parameters value boxes in the mixer column. If you hold down both mouse buttons the EQ parameters can be changed more quickly, and the direction of the change is determined by the mouse button pressed first. Double-clicking on a parameter calls up a dialog box where the required value can be entered:

EQ 2-BAND		BP
100	2708	Hz
0.94	2.17	Q
-3.0	4.8	dB

The mono 2-band EQ element has two separate fully parametric sections and for the stereo 2-band EQ, there are in fact four linked active EQs, providing two bands for each channel.

NOTE: In the small view mode of the mixer it is not possible to view the second EQ band. However it is displayed in the full view mode, which can be selected by pressing the [X] key on the keyboard or by ticking “Full Column Size” under the View menu.

Double-clicking an EQ 2-band element opens the following window:



The response of the EQ is shown in the curve display and you can adjust the parameters using the faders or value boxes in the usual way.

Multiple EQ windows can be opened at the same time, so for identifying which EQ elements the window is connected to, the mixer column and element numbers are shown in the title bar.

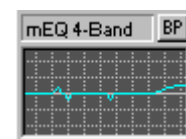
Just below the title bar there is a field where the name of the current preset is displayed. To the left of this name field there are load and save buttons which call up standard Windows open and save dialog boxes. To the right there is a bypass button which can be used for easy A-B comparisons.

Multi EQ

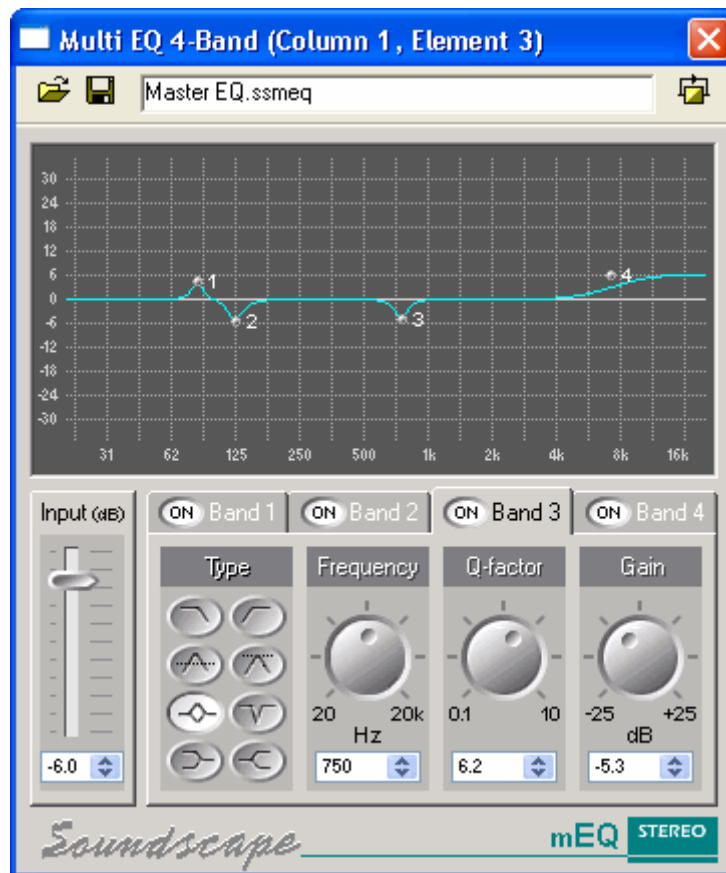
The multi EQ only uses only a little bit more DSP resources (per EQ band) than the EQ 2-band described in the previous section. However, it offers a lot more flexibility and features. It is a more recent addition to the list of mixer elements and its interface implements some new features. Therefore it will be described extensively.

Several variants of the multi EQ are available: 1-band, 2-band, 3-band, or 4-band, mono or stereo. As usual, more than one multi EQ can be inserted per mixer column.

The multi EQ parameters cannot be edited from the main SSL Soundscape Mixer window. Only the EQ curve is visible under the element name and bypass button:



Double-clicking the multi EQ element will open the following window, where all the parameters can be edited in several ways:



Below the curve display, to the left of the window, there is an input attenuator, which is provided for the cases where boosting certain frequencies in the EQ causes overload. Note that if the signal overloads, the EQ curve will change from blue to red, and this even happens in the small multi EQ display within the main Mixer window. So it's easy to visually locate the source of an audible overload, even if the mixer column output's peakmeter does not show it. The attenuation can be adjusted by clicking and dragging the fader, by clicking at the required fader position, or using the value box in the same ways that will be described for EQ band parameters later in this section.

To the right of the input attenuator, four parameter fields ("Type", "Frequency", "Q-factor", and "Gain") are displayed for the currently selected EQ band. The example above shows a 4-band stereo EQ, and you can see the tabs that can be used to switch the display from one band to another, with band 3 selected in this case. Each band also has an individual "ON" button.

The "Type" parameter lets you choose between eight different options: low pass, high pass, band pass with constant skirt gain, band pass with constant peak gain, peaking EQ, notch filter, low shelving, and high shelving. The symbols on the buttons are indicative of the EQ type, but if the

mouse pointer is held on one of the buttons, a banner will also appear displaying the corresponding curve type name.

The other parameters, "Frequency", "Q-factor", and "Gain", can be edited using the knobs or the value boxes:

- The knobs can be "clicked and dragged" with the mouse. Once a knob has been "grabbed", the distance between mouse pointer and knob determines the resolution of the knob's response. Finer adjustments become possible as this distance is increased. Alternatively, clicking at the required value's position in the area immediately around the knob will cause it to adjust its position accordingly.

- The values for the EQ bands' parameters can be edited by clicking, or clicking and holding the up and down buttons inside the value boxes.

- Alternatively, a parameter value can be selected by double-clicking in a value box. It will appear highlighted, with a blinking cursor. The computer keyboard can then be used to edit this value as required. Right-clicking in the same box will call up a menu with "Undo", "Cut", "Copy", "Paste", "Delete", and "Select All" entries. The currently available choices will appear solid, the others dimmed. Using these commands it is possible, for example, to copy parameter values from one multi EQ window to another, so that the same frequency can be treated in the same way in several mixer columns. While editing a value as described here, clicking the "Select All" item in the menu just re-selects all the value's digits, if needed.

- Right-clicking in a value box without first selecting the value will also call up the menu, but only the "Select All" item will be available (solid). If you click "Select All", then right-click in the box a second time, you will be able to use the menu's "Copy" command to copy the value to the Windows clipboard.

Left-clicking one of the available "ON" buttons activates or deactivates the corresponding EQ band. The button is highlighted when the EQ band is active.

Right-clicking an "ON" button "solos" the corresponding EQ band, meaning that the other EQ bands become inactive. The button will be highlighted and its name will be momentarily changed to "SOLO". When an EQ band has been "soloed" in this way, right-clicking its "ON" button a second time returns all the buttons to their previous state, whereas left-clicking the button deactivates all the EQ bands.

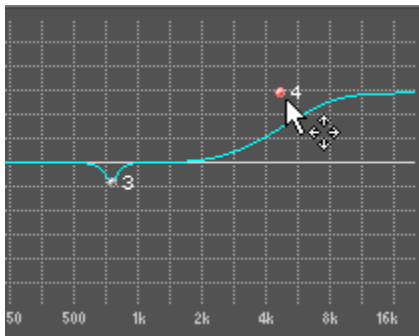
Right-clicking in the EQ band tab near the "ON" button will call up a menu with options to restore default settings for that EQ band or for all EQ bands, or to activate or deactivate solo mode for that EQ band (depending on current status).

The EQ curve can also be edited directly in the curve display:

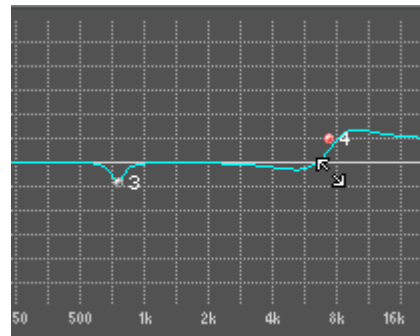
- The center frequency for each EQ band is represented in the curve display by a “node”. Each node has a number, so that they can all be identified easily even if they have been moved around a lot (any of the EQ bands can be set to any center frequency, so the node for EQ Band 1 could end up being between the nodes for EQ bands 3 and 4). The nodes can be “clicked and dragged” with the mouse. The frequency and gain parameters are adjusted accordingly in real-time.
- The curve itself can also be shaped by clicking and dragging, to increase or decrease the bandwidth of an EQ band.

In either case (dragging the nodes or the line), the node for the EQ band being edited turns red to help identification (this can be useful when the nodes and corresponding numbers are very close to one another). The mouse pointer appearance also changes according to the edit which is being carried out, as shown in the following examples:

Dragging a node:



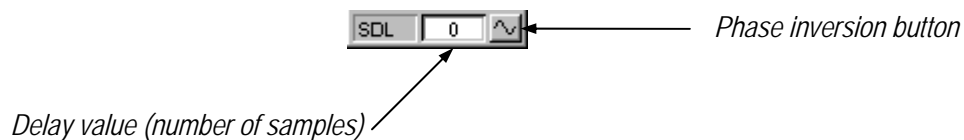
Dragging the line:



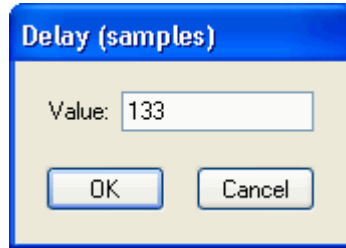
Just below the title bar there is a field where the name of the current preset is displayed. To the left of this name field there are load and save buttons which call up standard Windows open and save dialog boxes. To the right there is a bypass button which can be used for easy A-B comparisons.

Sample delay line

The sample delay line element can be used to compensate for time delays generated in the mixer or resulting from AD/DA conversion. It can also be used to invert the phase of a signal.



The signal can be delayed by up to 255 samples. The value can be edited directly in the value box using the mouse buttons in the usual way. Alternatively, double-clicking in the value box will call up a dialog box where the required value can be entered:



Of course, there is room for creative uses of the sample delay line. For example, splitting a stereo pair of tracks into two mono tracks and inserting a sample delay line element in the signal path for one of these tracks can widen the perceived stereo image. Phase inverting the delayed signal can also add extra width, but may cause mono cancellation or phasing.

Inputs and outputs

Mono, stereo, 4, 6, and 8 channel input elements can be inserted at any point in a mixer column and can receive their signal from any external input(s) or internal bus(es). They have a Mute button.



NOTE: Please note that when inserted in a mixer column, an input always blocks any signal from the mixer elements above it in that column. A benefit of this feature is that an insert point can be created at any point in a mixer column by combining a send or output element with an input element just below it.

All the output types that are available for a mixer column when it is first created are also available for the individual, "plug-in" output elements which can be used to send the signal from any point in a mixer column to any external output(s), internal bus(es) or stream(s). Below is a reminder of the sixteen available output types, which have been described in the "Mixer column input/output configurations" section of this chapter:

- Outputs with fader: mono, mono to stereo with or without EPP (Equal Power Panning), stereo with or without EPP, 4, 6, or 8 channel, mono to LRCS, mono to LRC-LsRs.
- Outputs without fader: mono, mono to stereo, stereo, 4, 6, or 8 channel.

Input sources and output destinations can be changed by clicking them with the I/O and DSP Assign tool, as described in the "Input and output selection" section of this chapter.

The various controls and their operation have been described in the “Mixer controls overview”, “Output pan and balance controls”, and “Fader and mute groups, output mute buttons, solo groups and solo buttons” sections of this chapter.

NOTE: As well as sending a duplicate of the signal to the selected destination, an output element also passes the original signal through to the next element below it in the Mixer column where it is inserted.

NOTE: “Output without fader” elements and an input elements look very similar. This could be confusing, for example, if you load a very complex Mixer that you have not used for a long time. If you are in any doubt as to the nature of a mixer element, you can select the Element Info tool and click that element (in Mixer Edit mode only). A window will appear where you can check all the available information for that element. The first item in that window will tell you what the element is. Additionally, there is always a little space above an output element or below an input element that can help with identification (i.e., the top of an output element or bottom of an input element cannot be moved right against the element above or below it – there is always a small “gap” remaining).

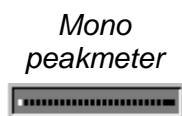
Faders

Mono and stereo faders are available for insertion at any point in a mixer column. They could be useful, for example after a “plug-in” input element used as an effects return into a mixer column. Please take care when choosing a fader element: if a mono fader is inserted in a stereo signal path, only the left side of the signal will respond to the fader. A stereo fader would work in a mono signal path, but requires more DSP resources than a mono fader. Mono and stereo faders look the same:



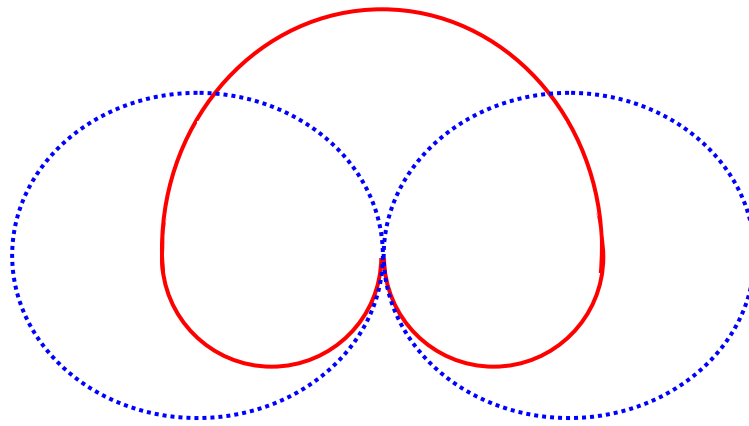
Peakmeters

Mono and stereo peakmeters are available for insertion at any point in a mixer column. Output peakmeters are pre-fader, so it is advisable to have a peakmeter after the input element when recording:



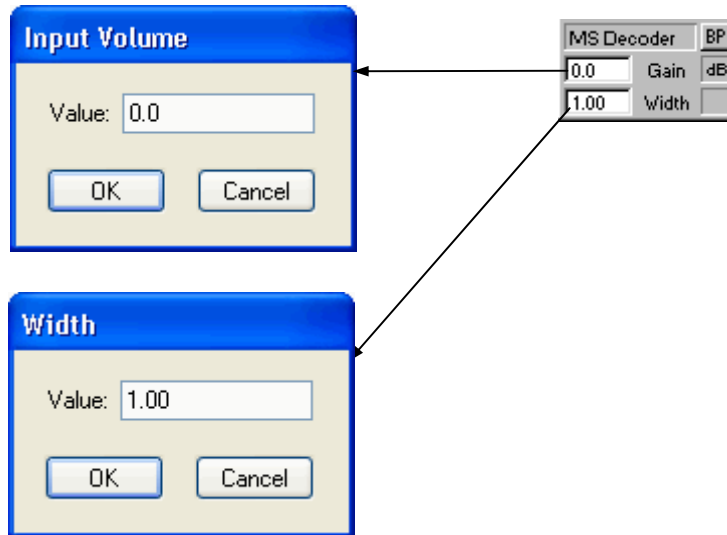
MS Decoder

NOTE: The MS (“mid-side”) recording technique consists of combining (matrixing) two signals, typically from one cardioid and one figure of eight condenser microphones, to create a stereo signal. This signal translates easily into mono (the signal recorded from the figure of eight microphone is phase inverted on one side, so that when summing up into mono the left and right sides cancel each other out, while the signal recorded from the cardioid microphone remains unaffected). It is also possible to control the stereo spread by varying the relative levels of the mid and side components. On a traditional mixing console matrixing requires several mixer columns. In the SSL Soundscape Mixer, only one stereo in/stereo out mixer column with the MS Decoder plug-in element is needed to create the stereo pair, and dedicated controls allow easy adjustment of all parameters.

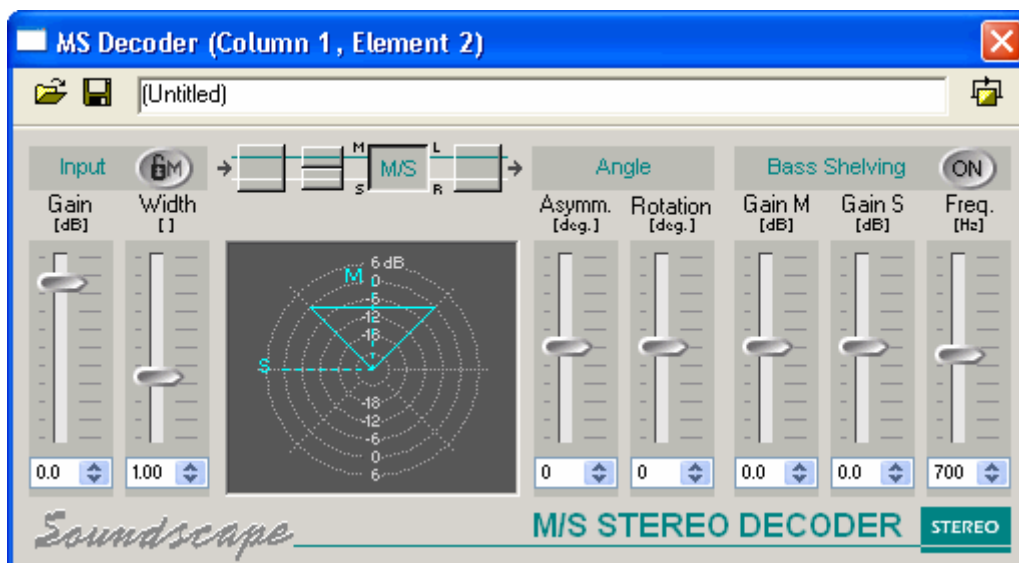


- Cardioid microphone, mid signal
- Figure of eight microphone, side signal

The gain and width parameters for the MS signal can be adjusted directly in the mixer column using the mouse buttons. If you hold down both mouse buttons the values can be changed more quickly, and the direction of the change is determined by the mouse button pressed first. Double-clicking a parameter value calls up a dialog box where this value can be edited:



Double-clicking the element's name calls up the main MS Decoder window:



The editable parameters are as follows:

Input section

– Lock Mid button:

If the Lock Mid mode is activated (button highlighted):



...then the relative gain of the mid MS matrix input signal is not affected by the “width” setting (described below).

If the Lock Mid mode is not activated (button not highlighted):



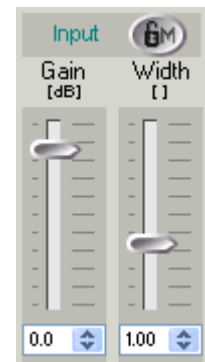
...then the relative gains of the mid and side MS matrix input signals vary at the same time and in opposite directions.

– Gain (-36.0, 6.0dB):

The overall input gain applied to both input channels.

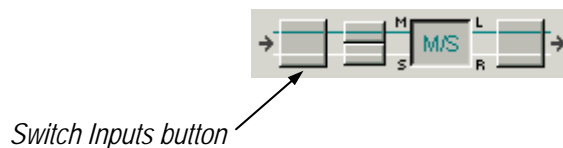
– Width (0.00, 3.00):

Ratio expressing the gain of the side MS matrix input signal divided by the gain of the mid MS matrix input signal.



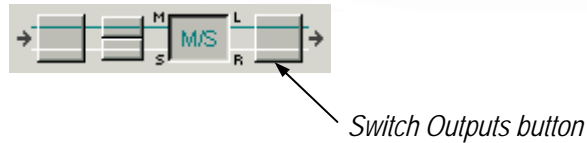
Matrix/Routing section

– Switch Inputs button:



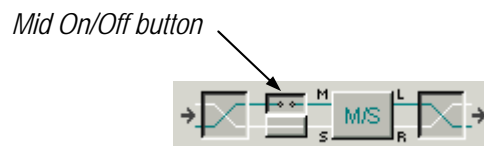
Interchanges the input channels before the signals reach the MS matrix (so the MS Decoder can be used whichever input each microphone is connected to).

– Switch Outputs button:



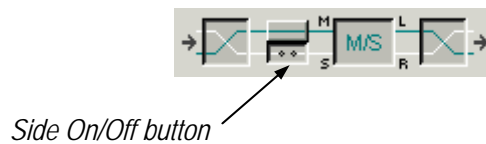
Interchanges the output channels.

– Toggle Mid On/Off button:



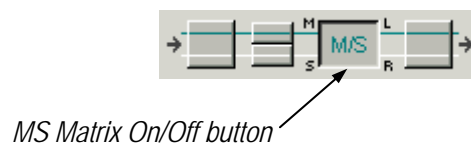
Clicking this button cuts the mid MS matrix input signal (as shown above), so that the effect of the MS matrix on the side signal can be monitored easily.

– Toggle Side On/off button:



Clicking this button cuts the side MS matrix input signal (as shown above), so that the effect of the MS matrix on the mid signal can be monitored easily.

– Toggle Matrix On/off button:



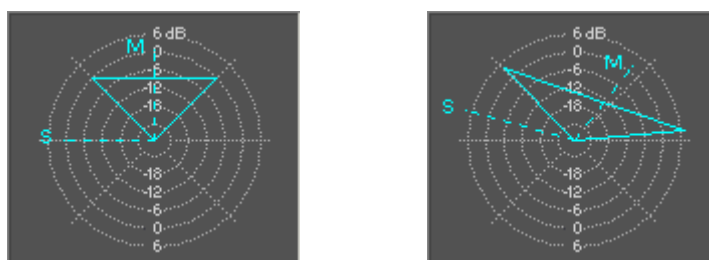
Clicking this button toggles MS decoding on (as shown) or off (inactive status).

NOTE: If MS decoding is turned off, the signals are still affected by the gain, width and bass shelving settings. However, the asymmetry and rotation parameters will have no effect on the output signals.

NOTE: If the MS matrix is active, both input signals are attenuated by 6 dB. Thereafter, they are subtracted and summed in order to constitute the required left and right output signals.

Graphical display

The display provides a visual representation of the perceived soundfield, as defined and modified in real time by the parameter controls, and contributes to the intuitive operation of the MS Decoder. The direction and length of the M and S vectors (dotted lines) represent the orientation and gain of the mid signal microphone and side signal microphone respectively. The extent of the triangle (solid lines) in relation to the dB scale represents the overall gain, the angle between the M and S vectors varies according to the asymmetry parameter setting, and the overall orientation of the displayed soundfield responds to adjustments of the rotation and asymmetry parameter settings.



Angle Section

– Asymmetry (-90, 90 degrees):

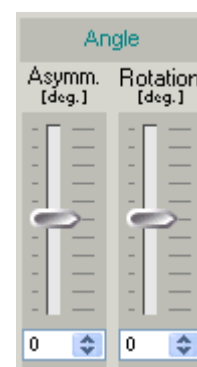
Angle shift applied to the side MS matrix input signal along with the angle shift introduced due to the “rotation” parameter. The value of the parameter has no effect if the MS matrix is not active.

NOTE: The setting of this parameter does not affect the mid MS matrix input signal at all.

– Rotation (-45, 45 degrees):

Angle shift applied to both the side and mid MS matrix input signals.

NOTE: The angle shift of the side MS matrix input signal also depends on the setting of the asymmetry parameter.



Bass Shelving section

– Gain M (-6.0, 6.0 dB):

Bass shelving gain setting of the mid MS matrix input signal.

This parameter is used in combination with the “Gain S” parameter mainly in order to enhance the stereo perception at lower frequencies.

NOTE: The Q-factor of the shelving filter is constant and equal to 0.7.

– Gain S (-6.0, 6.0 dB):

Bass Shelving Gain setting of the side MS matrix input signal.

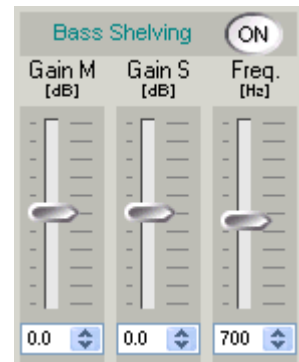
This parameter is used in combination with the “Gain M” parameter mainly in order to enhance the stereo perception at lower frequencies.

NOTE: The Q-factor of the shelving filter is constant and equal to 0.7.

– Frequency (200, 1300 Hz):

This parameter determines the cut off frequency for both the mid and side bass shelving filters.

NOTE: The MS Decoder mixer element (described in the “Mixer” chapter) can be used to check a stereo Arrangement for mono compatibility. Insert the MS Decoder in the path of the stereo signal, and set its parameter as follows: M/S Matrix: On to monitor in mono, Off to monitor in stereo (other top row buttons off), Gain: +6dB (0dB if monitoring via an EPP output element), Width: 1.00, Asymm: -90, Rotation: 0, Bass Shelving: Off).



Optional plug-in mixer elements

Numerous optional plug-ins are available for the SSL Soundscape Mixer, from Solid State Logic and leading third party companies. When installed on your computer, they appear as options in the mixer elements menu when you create a Mixer. They must be enabled by entering a password under menu: Settings|Passwords. These plug-ins are generally supplied with their own manual.

Available plug-ins include the Audio Toolbox by Solid State Logic, the Reverb by Wave Mechanics, the Reverb and Dynamizer by TC-Works, the Dolby Surround Pro Logic (Dolby encoder/decoder and noise generator) by Dolby Laboratories Inc. and Solid State Logic, Dehiss by Cedar Audio, Compressor-X by Sonic Timeworks, Aural Exciter Type III and Big Bottom Pro by Aphex Systems, Hyperprism by Arboretum Systems, Spindelay by Spinaudio, the DRAWMER

SDX100 compressor/expander/noise gate, the Saturated Fat distortion and cabinet modelling processor and Final Mix mastering processor by Acuma Labs, the SSL Console EQ and Filters by Solid State Logic and the Soundscape EACM EQ1 and EQ2 developed by Algorithmix and Solid State Logic. New DSP Effects Plug-ins are constantly being developed for the SSL Soundscape platform, please check our website for the latest information.

Native mixer elements

VST mixer elements

VST effect plug-ins running on the host CPU can be inserted in the SSL Soundscape Mixer just like any other mixer elements.

The VST plug-ins are stored on the PC as files with a “dll” extension. For a VST plug-in to be available to the SSL Soundscape Mixer, the corresponding dll file must be loaded by the SSL Soundscape Mixer during startup. By default, the SSL Soundscape Mixer scans the “C:\Program Files\Soundscape\MixElem\VST” folder and loads the dll files located in that folder. A different path can be specified by adding a “VSTLibPath=” line to the ssMixer.ini file (located in C:\Program Files\Soundscape\ssMixer in a standard installation). Note that any subfolders of the designated folder will be scanned as well. During scanning, a small window appears in front of the splashscreen where the plug-ins’ names are displayed as they are loaded:

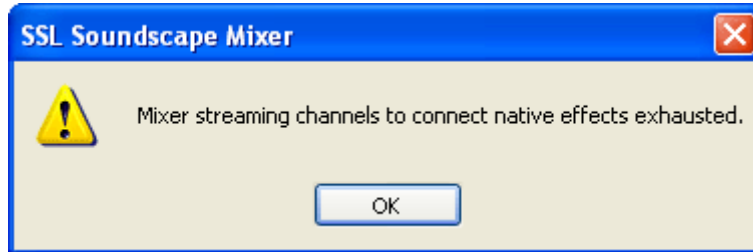


Dialog boxes may also appear during that phase, for instance when a plug-in requires authorization.

***NOTE:** In rare cases VST plug-ins may not be loaded, because their “unique ID” conflicts with the “unique ID” of an already loaded Soundscape mixer element. In such cases a warning message will be displayed.*

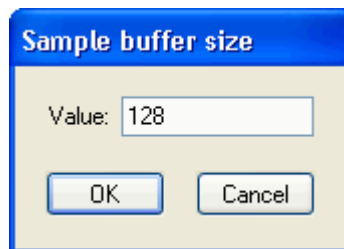
Since the VST plug-ins run on the CPU of the host PC, the audio must be routed at high speed between the SSL Soundscape Mixer and the PC in order to use VST effects. This is done using the “streams” provided by the Mixpander. One stream is used per channel of audio, so that a mono VST plug-in uses one stream and a stereo VST plug-in uses two streams (in each direction). However, stream usage has been optimized so that consecutive VST plug-ins in the same mixer

column will use the same streams. Available streams are assigned automatically to VST plug-ins, taking into account that streams already used by a Windows application or assigned to a mixer input, output or send element are not available. If the number of available streams becomes insufficient for the number of VST plug-ins being used, the following warning will be displayed:

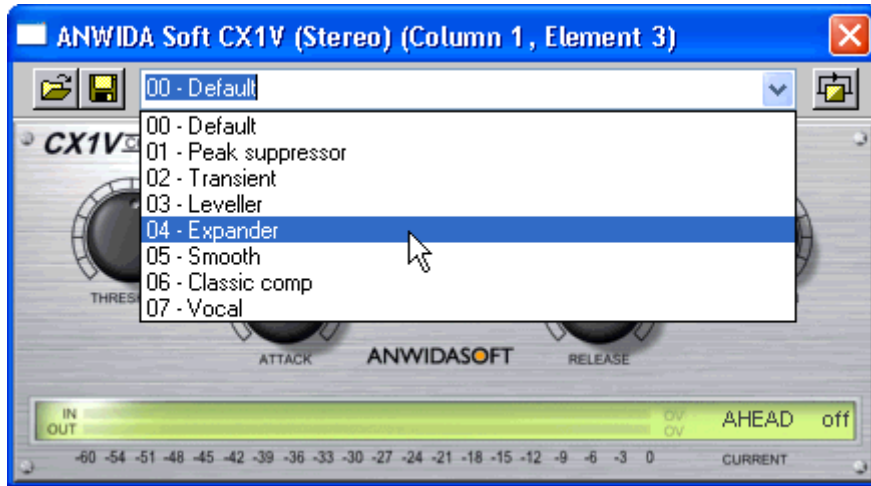


In this case the Mixer will also become inactive until the situation is resolved by deleting one or more VST plug-in(s), reassigning or muting one or more input, output or send element(s) or closing or re-routing a Windows application in order to release some streams as necessary.

The default buffer size for native mixer elements is 128 samples. It can be changed under menu: Settings|Native mixer elements Sample Buffer Size. Typically, it should be raised if the PC is struggling to cope with the processing demands. Multiples of 64 up to 1024 can be used. If an invalid value is entered, the closest valid value below it will be used instead.



Operationally, VST plug-ins within the SSL Soundscape Mixer generally behave in a similar fashion to Soundscape format DSP-powered plug-ins and Soundscape mixer elements in general. They can be moved or copied using the relevant tools, their settings are saved as part of the Mixer, and automation works in the same way as for other mixer elements. However, the text box at the top of the main plug-in window behaves a bit differently. The arrow to its right can be used to open a program selection menu, and names can also be typed directly inside the box. The [Enter] key must be pressed to validate a newly entered name, otherwise it is lost as soon as a different program is selected using the menu.



Note that many VST plug-ins have their own separate program/bank management facilities.

VST mixer elements are shown in blue in the mixer columns, so they can be easily differentiated from other mixer elements which are generally shown in grey or in some cases with a customized look (like the Cedar plug-ins). The mixer column shown here features, starting below the track insert: a Drawmer SDX100 (grey), a Cedar Dehiss (black/custom look), and three VST mixer elements: Elemental Audio Systems' Eqium, Anarchy Effects' Spectral Autopan and PSP's MixTreble.



If a processing overload occurs in the host PC, a warning message is displayed, the VST mixer elements turn red and the Mixer is deactivated:



Click "OK" to close the message box. To reactivate the Mixer, its configuration must be changed. This can be done quickly by selecting the Mute tool, and muting and unmuting one of the mixer elements.



VSTi mixer elements

Everything written in the previous section about VST plug-ins also applies to VSTi (VST instrument) plug-ins. In addition, for VSTi plug-ins, when their main window is open, clicking the arrow to the right of the “Port” and “Chan” fields will call up menus where a MIDI input port and MIDI channel respectively can be selected by clicking their name.



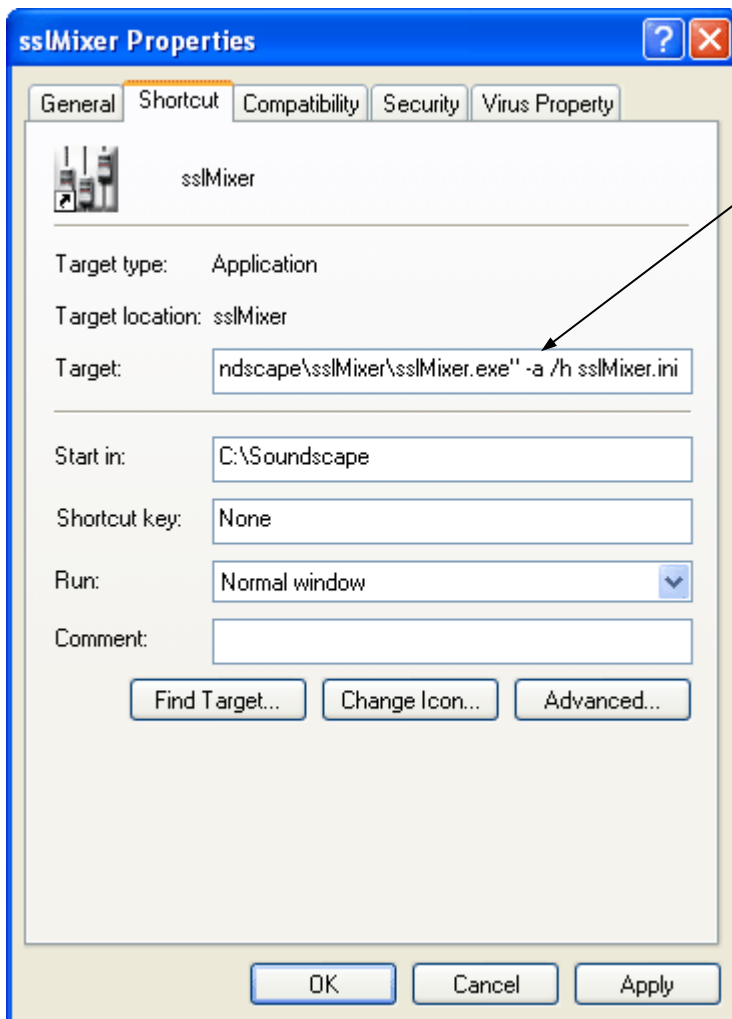
NOTE: In order to use VST instruments, a MIDI interface must be installed on the host computer and correctly configured.

Additional information regarding VST/VSTi plug-in compatibility

A command line switch is needed to enable certain VST or VSTi plug-ins to work in the Soundscape environment. Typically, launching the SSL Soundscape Mixer application without the command line switch when such a plug-in is installed results in an “object initialization” error and the program does not open. At present the only tested examples of this are Lounge Lizard and Tassman from Applied Acoustics Systems but the same may occur with other plug-ins. The command line switch solves the problem by initializing COM objects as "APARTMENT_THREADED" instead of "MULTI_THREADED".

To use the “-a” command switch, insert “-a” just after “sslMixer.exe” in the Target line of the SSL Soundscape Mixer shortcut’s properties. In a standard installation the SSL Soundscape Mixer’s shortcut is located in C:\Documents and Settings\All Users\Start Menu\Programs\Startup. Right-clicking the shortcut will open the Properties window. The edited line should read as follows:

"C:\Program Files\Soundscape\sslMixer\sslMixer.exe" -a /h sslMixer.ini



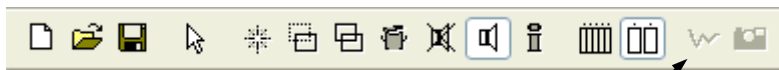
-a" command line switch

***NOTE:** Using this command line switch may slow down the performance of the Console Manager application, although this is generally unlikely.*

3. Control Surfaces and Automation

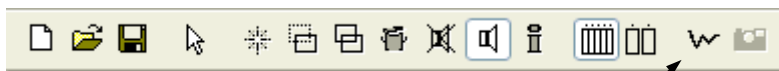
The SSL Soundscape Mixer can be controlled from a hardware control surface and supports full MIDI automation via the SSL Soundscape Console Manager program, which can be downloaded from the Solid State Logic website.

When Console Manager is installed on the host PC, it can be launched by clicking “Connect to Console Manager” under the Settings menu of the SSL Soundscape Mixer application. The Automation Enable Toggle, which by default appears dimmed as shown below...:



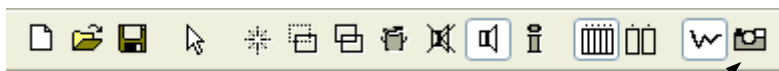
Automation Enable Toggle (dimmed)

...will then appear solid:



Automation Enable Toggle (solid)

Clicking the Automation Enable Toggle (or ticking “Enable Mixer Automation” under the Settings menu) will enable the Automation and cause the Snapshot button to change from dimmed to solid:

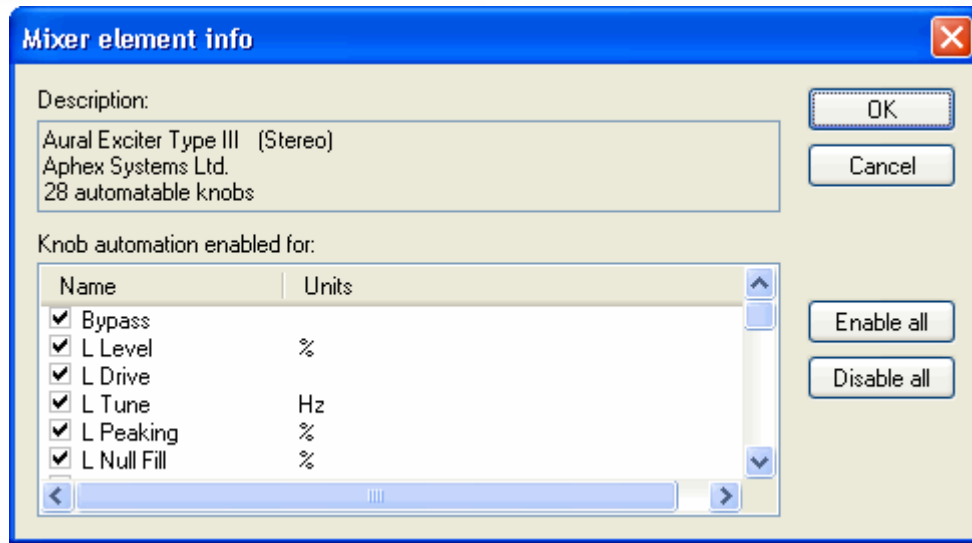


Snapshot button (Automation enabled)

When Automation is enabled, the SSL Soundscape Mixer can respond to MIDI data received via Console Manager (subject to a correct configuration of that program), and can transmit MIDI via Console Manager each time an automatable mixer control is used. Clicking the Snapshot button causes the SSL Soundscape Mixer to transmit the settings of all automatable mixer controls as MIDI data to Console Manager. Most mixer controls (faders, buttons, pots etc.) are automatable, including those that control Soundscape format DSP plug-in and VST plug-in parameters. In Mixer Edit mode (press [E] to toggle between Mixer Edit mode and Mixer Control mode), clicking a mixer element with the Element Info tool...:



...will call up a window where all the automatable controls for that element are listed:



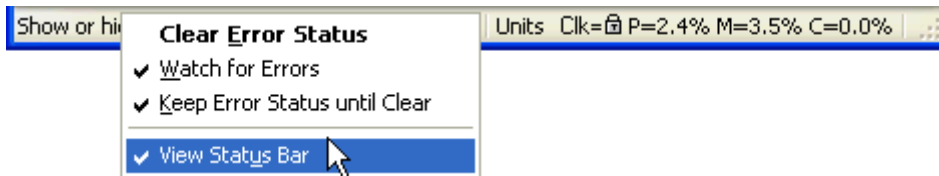
The automation can be enabled or disabled for each individual parameter by respectively checking or unchecking the corresponding box, and can be enabled or disabled globally for all the parameters of the mixer element using the “Enable all” and “Disable all” buttons. Clicking “OK” will save the changes and close the window, clicking “Cancel” will undo the changes and close the window.

The Console Manager program allows the SSL Soundscape Mixer to respond correctly to a hardware control surface according to a dedicated or generic “Console Interface”. Console Interfaces are available for a number of popular control surfaces. Generic Console Interfaces include the MIDI Mixer Map interface, which can be configured to work with most control surfaces and digital consoles that can transmit MIDI data. Please refer to the Console Manager documentation for more details.

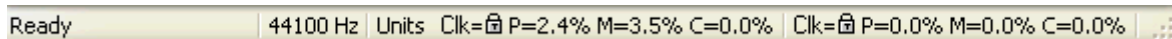
Since the SSL Soundscape Mixer’s Automation uses MIDI data, this data can be routed to a MIDI sequencer, recorded and transmitted back to the SSL Soundscape Mixer (always via Console Manager) for full mixer automation.

4. Status Bar

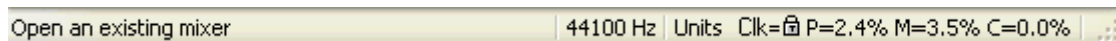
The Status Bar is located at the bottom of the SSL Soundscape Mixer window. It can be shown or hidden by ticking or unticking “Status Bar” under the View menu. When it is visible, it can be hidden by right-clicking it and unticking “View Status Bar”:



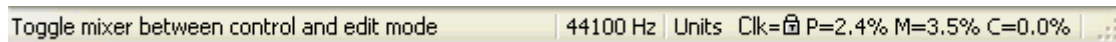
The Status Bar shows information about the percentage of DSP resources used by the Mixer, as described in the “Mixer” chapter. When multiple cards are used, resource usage is indicated for all of them:



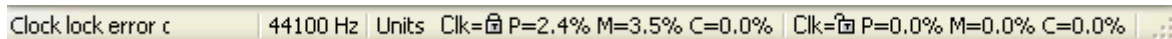
The Status Bar also displays helpful information about the Toolbar buttons...:



...and about certain menu items when the mouse pointer is placed over them:

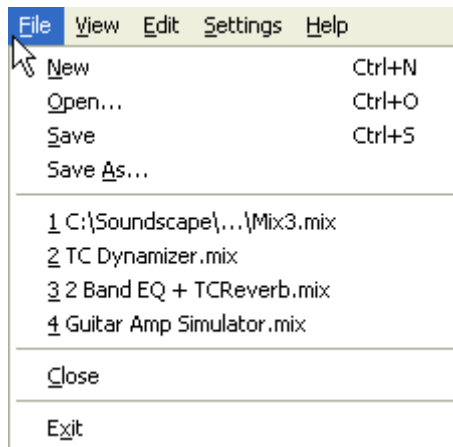


Finally, the Status Bar may display information about the Error Status: PO for processing overruns, SU for streaming underruns, INACT for Mixer inactive, subject to the “Watch for errors”, “Keep Error Status until Clear” and “Clear Error Status” options which can be activated or deactivated by right-clicking the Status Bar and ticking or unticking the corresponding item in the pop-up menu, or under the View Menu. These options are described in more detail in the “Error Status” section of the “View Menu” chapter. Master Clock lock errors are also indicated, by a blinking open padlock icon or a question mark (depending on the Master Clock source) for the card that is not properly synchronized and a message to the left of the Status Bar:



The system tray icon will also blink if a lock error occurs.

5. File Menu



New [Ctrl]+[N]



Clicking “New”. will create a new, empty Mixer, as described in the “Mixer” chapter. If a Mixer is already active when you click this item and has been edited since the last save, the following dialog box will appear, giving you the option to save it. If you click Yes you will be presented with a standard Windows “Save” dialog box. You can also cancel the operation:

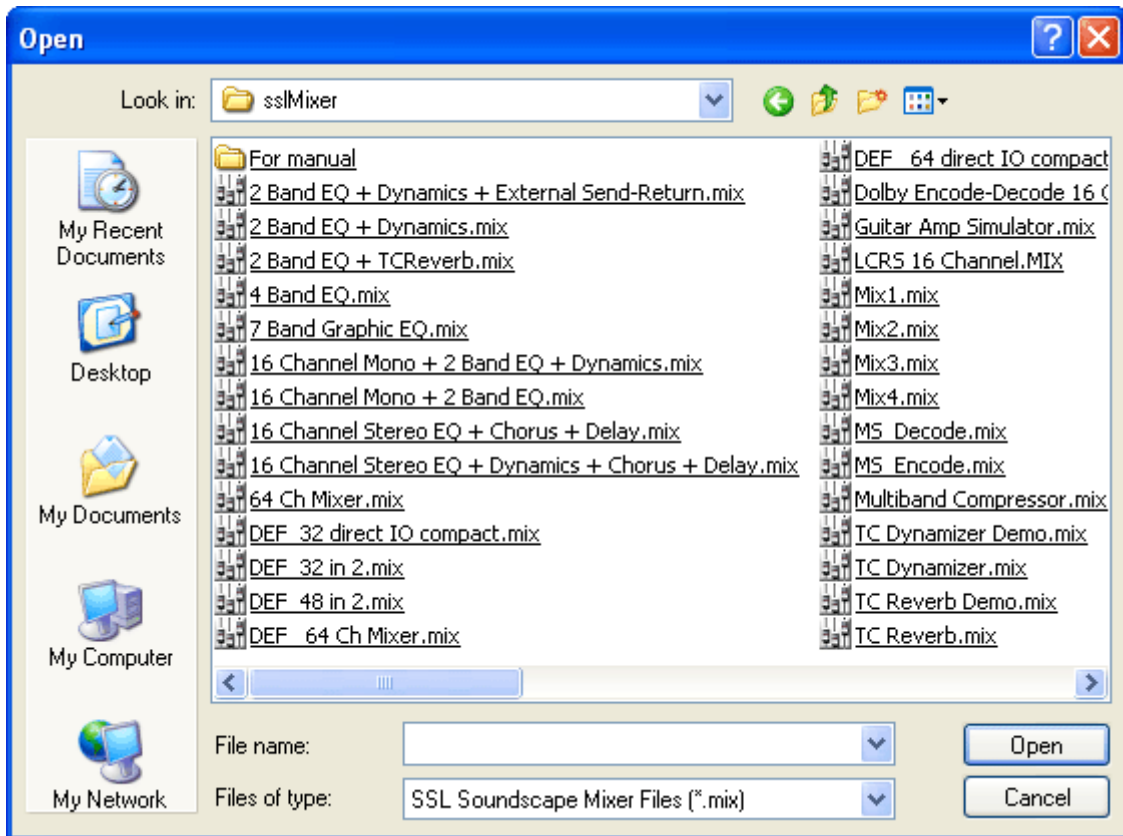


Open [Ctrl]+[O]

Open...

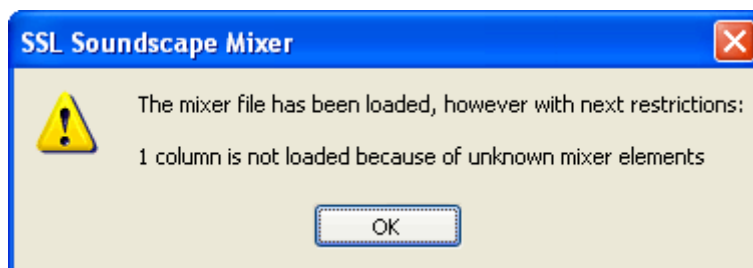
Ctrl+O

Clicking “Open” calls up a standard Windows dialog box which can be used to open a mixer file stored on the PC. The default path for mixer files is C:\Soundscape\Mix\ssMixer.

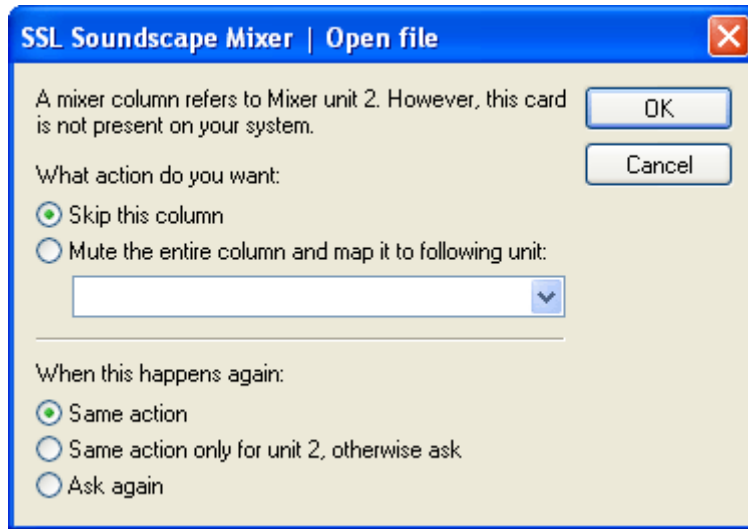


If a Mixer is already active when you click this item, the same dialog box will appear as when you click “New Mix” in the same conditions (see above).

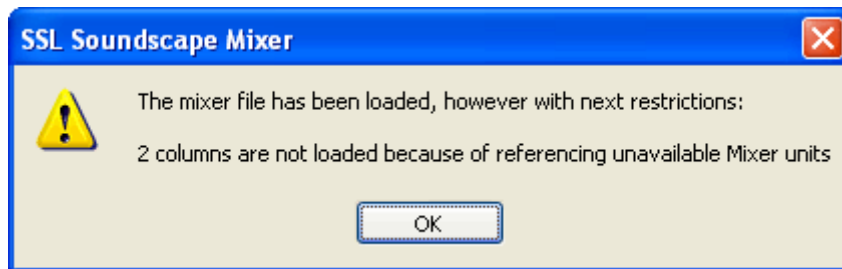
If the Mixer you are opening includes one or more mixer elements which are not available (e.g., an optional plug-in which is not installed on the computer), the following warning will be displayed:



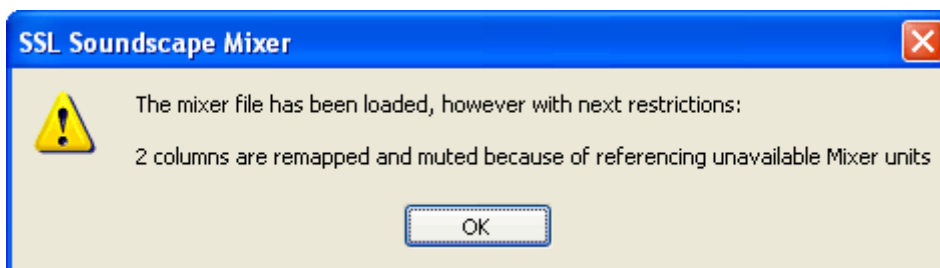
If the Mixer you are opening has one or more columns which refer to units that are not available (e.g., cards that you have removed from the computer), the following dialog box will be displayed:



Select “Skip this column” if you want to load the Mixer without these columns. Upon clicking “OK” the Mixer will be loaded and a confirmation message will be displayed:



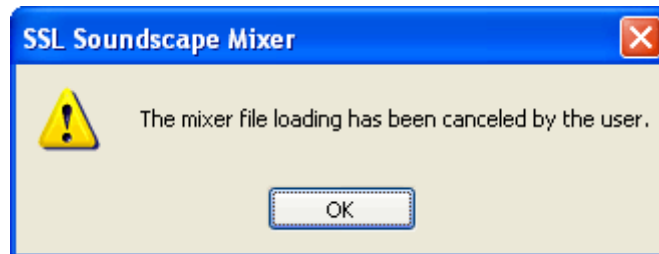
Alternatively you can select “Mute the entire column and map it to following unit:” and choose another card using the drop-down list. Upon clicking “OK” the Mixer will be loaded and a confirmation message will be displayed:



NOTE: The Mute tool can be used to unmute the muted mixer columns. This may cause mixer elements to become muted in other mixer columns.

In the bottom section of the dialog box you can specify what action should be taken the next time this situation occurs.

Clicking “Cancel” in the main dialog box will abort the procedure. In that case the Mixer will not be loaded and the following message will be displayed:



Save [Ctrl]+[S]

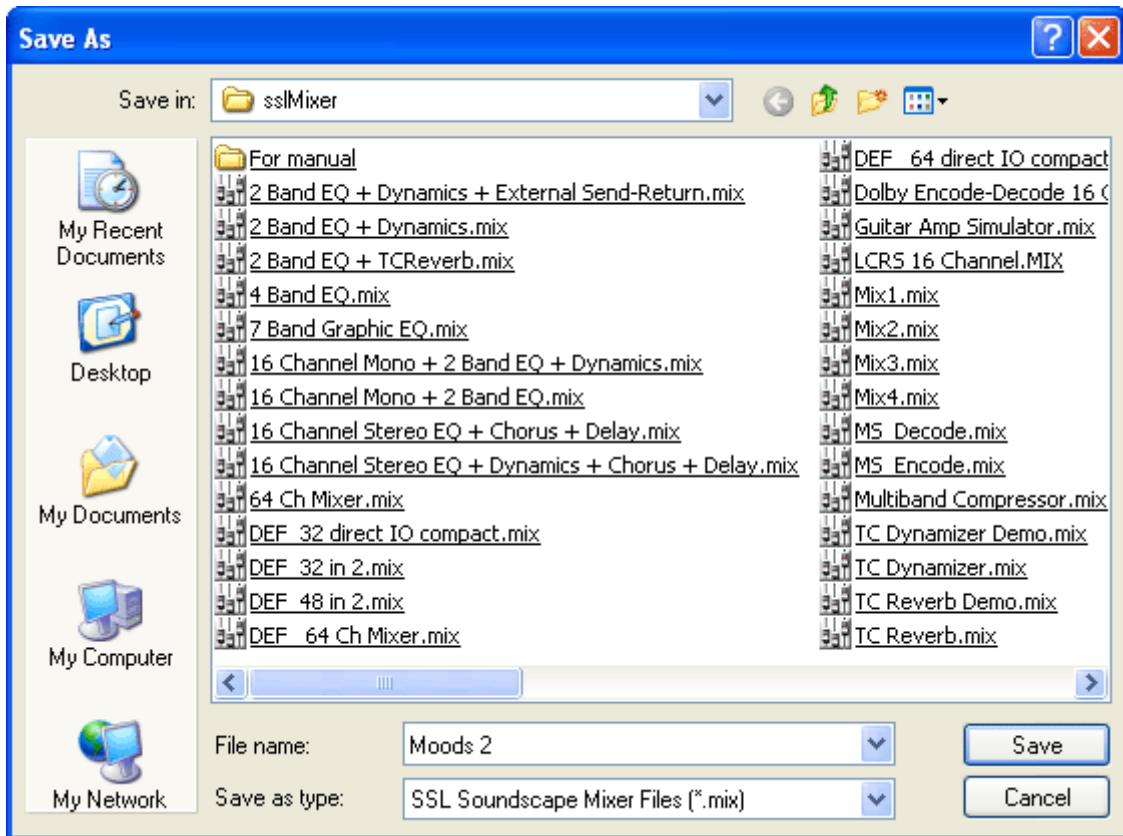
| Save | Ctrl+S |

Clicking “Save” updates the last saved version of the active Mixer to the current state of this Mixer. If the active Mixer has not been saved previously, a standard Windows “Save As” dialog box appears, just like when using the “Save As” command described next.

Save As

Save As...

Clicking “Save As” calls up a standard Windows dialog box where the Mixer can be named or renamed and the save destination changed:



Previous mixers

- 1 C:\Soundscape\...\Mix3.mix
- 2 TC Dynamizer.mix
- 3 2 Band EQ + TCReverb.mix
- 4 Guitar Amp Simulator.mix

This section of the menu displays a list of the most recently used mixers. Clicking a mixer’s name will load it.

Close

| Close |

Clicking “Close” closes the SSL Soundscape Mixer window. However, the Mixer remains active and the window can be reopened by clicking the system tray icon. This is the same as clicking the Close button in the top right corner of the SSL Soundscape Mixer window.

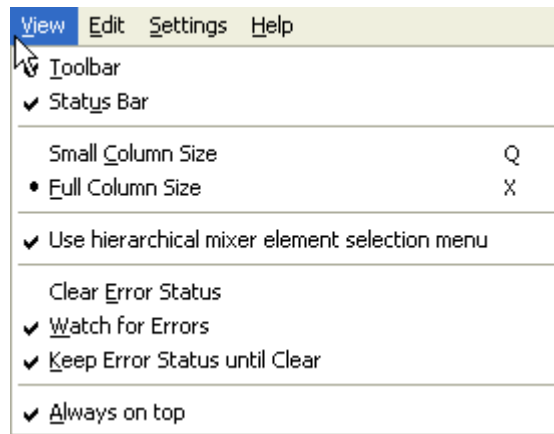
Exit

| Exit |

Clicking “Exit” closes the program. If the currently active Mixer has been edited since the last save, the following dialog box will appear, giving you the option to save it. If you click Yes you will be presented with a standard Windows “Save” dialog box. You can also cancel the operation:



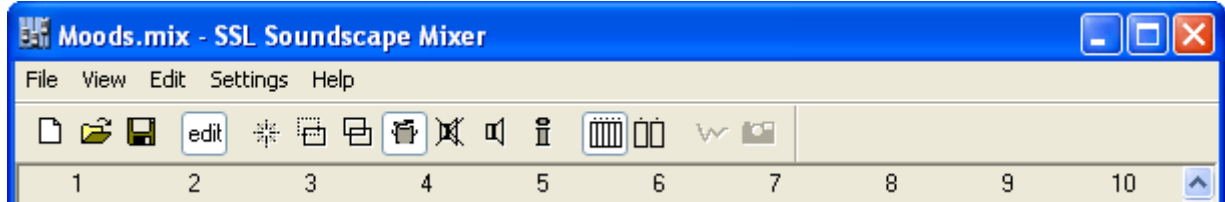
6. View Menu



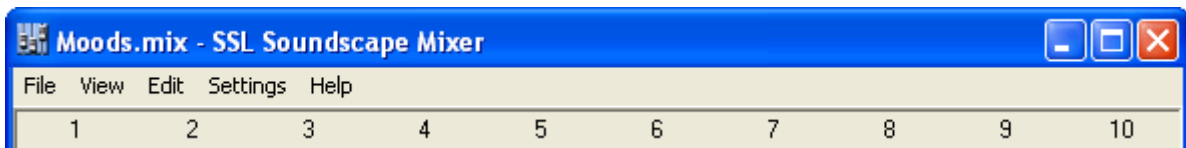
Toolbar



Ticking or unticking this item determines whether the Toolbar will be shown as in the picture below...:



...or hidden as shown here:

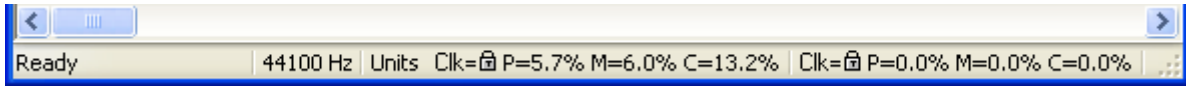


NOTE: This setting applies regardless of the current position and docked/undocked status of the Toolbar.

Status Bar



Ticking or unticking this item determines whether the Status Bar placed at the bottom of the SSL Soundscape Mixer window will be shown as in the picture below...:

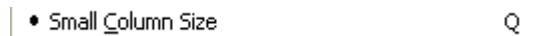


...or hidden as shown here:



NOTE: Right-clicking the Status Bar calls up a pop-up menu. Unticking "View Status Bar" in that menu will also hide the Status Bar.

Small Column Size [Q]



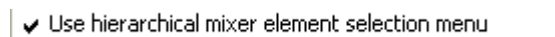
Clicking this item (or pressing [Q] on the computer keyboard) selects a narrow view mode for the SSL Soundscape Mixer window. More mixer columns can be displayed (e.g., 17 columns at 1024 x 768 resolution) but some controls, for instance the solo group assignment boxes and fader and mute group assignment boxes, are hidden.

Full Column Size [X]



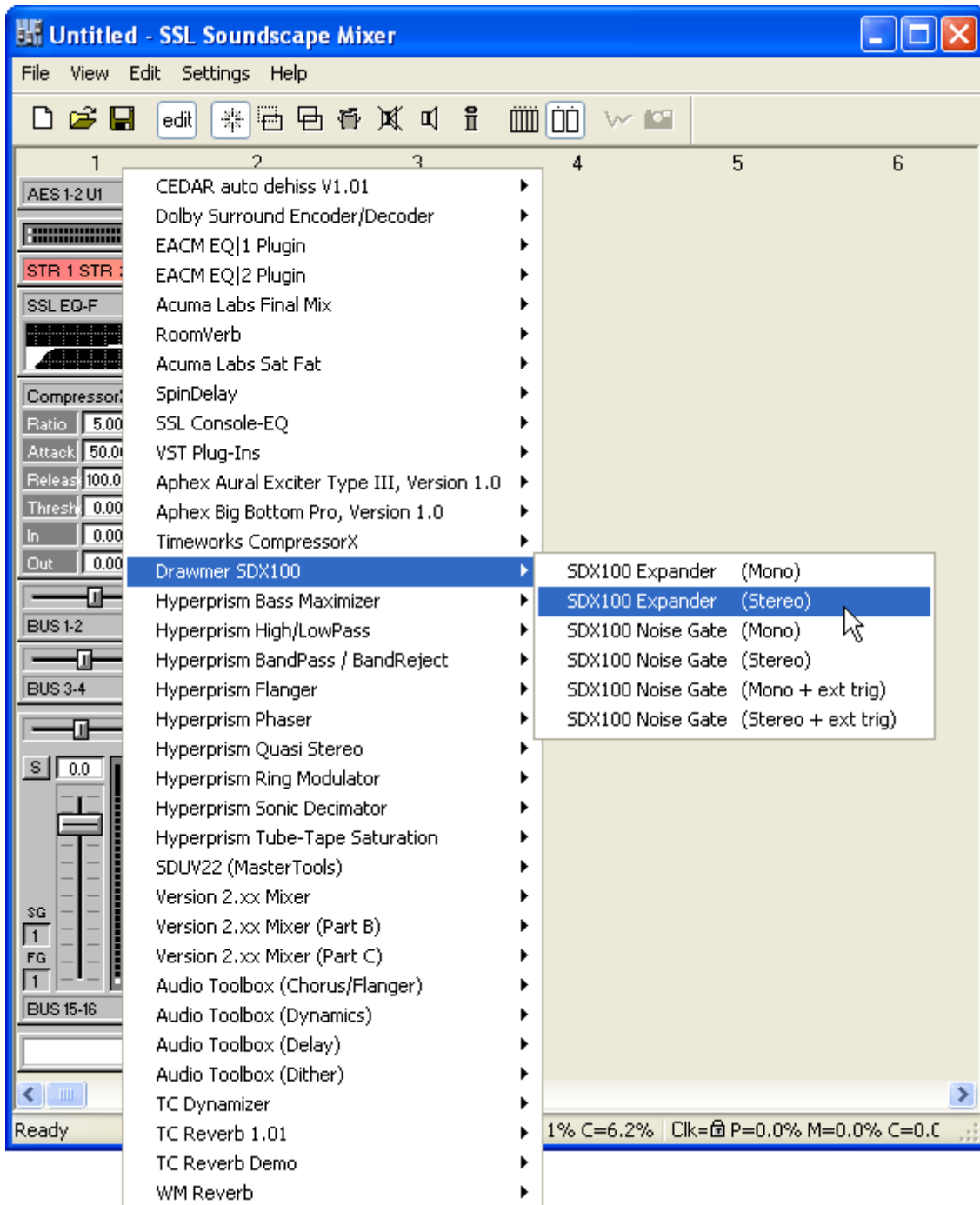
Clicking this item (or pressing [X] on the computer keyboard) selects a wide view mode for the SSL Soundscape Mixer window. Less mixer columns can be displayed (e.g., 11 columns at 1024 x 768 resolution) but all the controls are shown.

Use hierarchical mixer element selection menu



When the Create tool is used in Mixer Edit mode to insert a mixer element into a mixer column, a menu appears that lists all the available mixer elements (as described in the "Mixer" chapter). The sheer size of this menu can make it difficult to find a particular element, especially if a lot of plugins are installed or if a small monitor is used.

If the “Use hierarchical mixer element selection menu” option is enabled (ticked), the menu is broken down into several sections: a smaller main menu, and pop-up submenus. All the standard mixer elements can be accessed from 3 main menu items: Version 2.xx Mixer, Version 2.xx Mixer (Part B), and Version 2.xx Mixer (Part C). Extra main menu items are used as necessary for optional plug-in mixer elements:



Error status

The “Clear Error Status”, “Watch for Errors” and “Keep Error Status until Clear” items of the View menu are also available in a pop-up menu that can be called up by right-clicking the Status Bar. Double-clicking the Status Bar is equivalent to clicking “Clear Error Status”.

Clear Error Status

| Clear Error Status |

Error codes may be displayed in the Status Bar: PO for processing overruns, SU for streaming underruns, INACT for inactive. By default, an error code displayed during normal operation will disappear after a few seconds, but if the “Keep Error Status until clear” option (described below) is active it will be displayed until “Clear Error Status” is clicked.

NOTE: Error codes resulting from a mixer building error, i.e. generated when the mixer configuration itself exceeds the capabilities of the available DSP, cannot be effectively cleared until the Mixer is modified. They will recur until the situation is resolved (e.g., by deleting a mixer element).

Watch for Errors

| Watch for Errors |

If this option is active (ticked), any errors are monitored and the corresponding codes are displayed in the Status Bar.

Keep Error Status until Clear

| Keep Error Status until Clear |

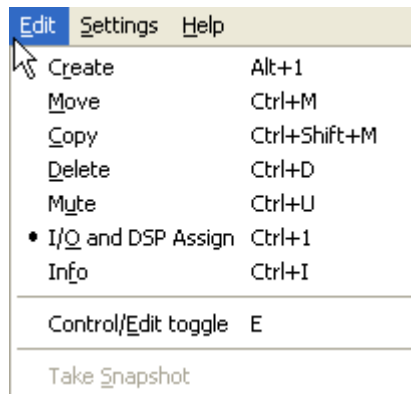
If this option is active (ticked), any error codes shown in the Status Bar are displayed until “Clear Error Status” is clicked. Otherwise the error codes disappear automatically after a few seconds (except for the “INACT” message when the Mixer configuration itself needs to be changed).

Always on top

| Always on top |

If “Always on top” is selected (ticked), the SSL Soundscape Mixer window will always be shown on top of any other window, even if that other window is active and except if that other window is also set to be “always on top”.

7. Edit Menu



Tool selection

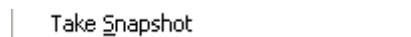
The first section of the Edit menu lists the editing tools, and clicking on any item in this section assigns the corresponding tool to the left mouse button.

Control/Edit toggle [E]



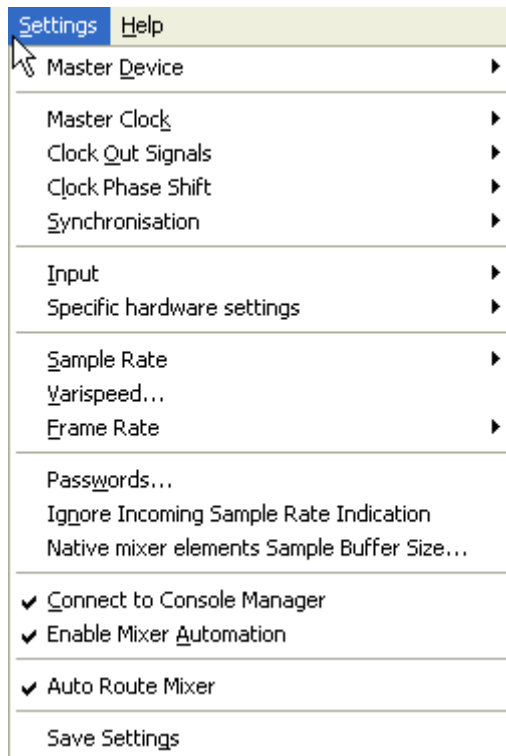
Clicking this item or pressing [E] on the computer keyboard switches between the Mixer Edit and Mixer Control modes, as described in the “Creating/Editing a Mixer” section of the “Mixer” chapter. It is equivalent to clicking the Control/Edit toggle button in the Toolbar.

Take Snapshot



This item is only available if the SSL Soundscape Mixer is connected to the Console Manager program and if Mixer Automation is enabled. When it is available, clicking “Take Snapshot” sends all the settings of the SSL Soundscape Mixer to Console Manager. This can be used, for instance, to update the controls of a hardware control surface used to control the SSL Soundscape Mixer. It is equivalent to clicking the Snapshot button on the Toolbar.

8. Settings Menu



NOTE: Some options that appear in the Settings menu apply to the SSL Soundscape Mixtreme and Mixtreme 192 hardware. Options that do not appear in the Settings menu for the SSL Soundscape Mixpander or that are not applicable to that card are not described in this manual.

NOTE: When an XLogic Alpha-Link unit is used with a Mixpander, its front panel controls are disabled for the parameters that can be adjusted under the Settings menu. The front panel LEDs reflect the settings made in the software. If the Alpha-Link is switched off while the software is running, an automatic recovery procedure restores it to the correct state as soon as it is switched on again.

Master Device



NOTE: This item is not present in the Settings menu if only one SSL Soundscape audio card is present.

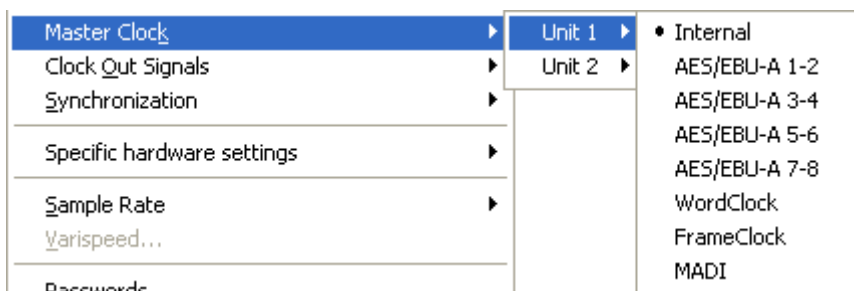
When the mouse pointer is on “Master Device” a submenu listing the hardware units (SSL Soundscape audio cards) installed in the PC is displayed. Clicking the name of a card selects it as the Master Device. The Master Clock mode of an SSL Soundscape audio card can only be set to “Internal” if that card is the Master Device.

The “Master Device” should provide the Master Clock reference for all SSL Soundscape audio cards installed in the computer and used by the SSL Soundscape Mixer software. However, it can itself operate as a Clock Slave device, locked to a Master Clock signal provided by an external device (e.g., a digital mixing console).

Master Clock

When the mouse pointer is on “Master Clock” a submenu is displayed for each installed SSL Soundscape audio card. Clicking the name of a Master Clock source in a submenu selects that Master Clock source for the corresponding card. The available Master Clock sources available are different depending on the Soundscape hardware configuration. For instance, in the screenshot below, Unit 1 is an SSL Soundscape Mixpander connected to an XLogic Alpha-Link MADI SX.

NOTE: Most problems encountered when transferring multi-channel digital audio signals are caused by incorrect routing or clock settings.



Internal

When “Internal” is selected, the Sample Rate is set by the on board Master Clock Generator of the XLogic Alpha-Link unit. Other digital devices connected to the SSL Soundscape hardware should be set to operate as Master Clock Slaves.

AES/EBU-A 1-2, AES/EBU-A 3-4, AES/EBU-A 5-6, AES/EBU-A 7-8

These options are available when the SSL Soundscape Mixpander is connected to an XLogic Alpha-Link MADI SX.

When AES/EBU-A 1-2, AES/EBU-A 3-4, AES/EBU-A 5-6 or AES/EBU-A 7-8 is selected, the SSL Soundscape hardware is slaved to the AES Clock signal received via the corresponding AES/EBU input pair of the XLogic Alpha-Link unit's eight-channel AES/EBU connector A.

ADAT A, ADAT B, ADAT C

These options are available when the SSL Soundscape Mixpander is connected to an XLogic Alpha-Link MADI AX or Alpha-Link AX.

When ADAT A, ADAT B or ADAT C is selected, the SSL Soundscape hardware is slaved to the ADAT Clock signal received via the corresponding ADAT Toslink™ input connector of the XLogic Alpha-Link unit.

WordClock

When "WordClock" is selected the SSL Soundscape hardware is slaved to the WordClock signal received at the BNC WordClock input connector of the XLogic Alpha-Link.

NOTE: For all variants of WordClock, the Sample Rate of the card is not automatically updated to match the incoming Sample Rate. Instead it remains set to the current value. It should therefore be updated manually.

FrameClock 0°, FrameClock 90°

When "FrameClock 0°" is selected the SSL Soundscape hardware locks to the "FrameClock" signal received via the XLogic Alpha Link's WordClock input connector. "FrameClock 90°" must be selected to lock to the FrameClock signal supplied by certain devices whose Audio signals and clock signals are out of phase (typically for MADI or ADAT SMUX signals).

NOTE: The "Internal" setting can be selected for instance when you want to play back or record signals at your chosen sample rate, when you are using the card as the "Master Device" in a multiple unit setup (or as a master with other equipment, e.g., another Alpha-Link unit or a digital mixing console) or when you do not want to use the Master Clock from an external source.

NOTE: For all external Master Clock settings (i.e., when the SSL Soundscape hardware operates as a Master Clock slave locked to a signal received via one of the XLogic Alpha-Link inputs), if no suitable Master Clock signal is received via the relevant input, the Status Bar will indicate a "Clock lock error", as described in the "Status Bar" chapter. In this case, check that the external device is correctly set to transmit an appropriate signal.

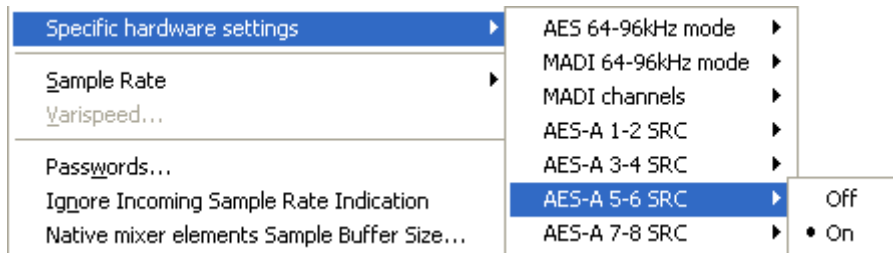
Synchronization

This option is not applicable to the SSL Soundscape Mixpander hardware.



Specific hardware settings

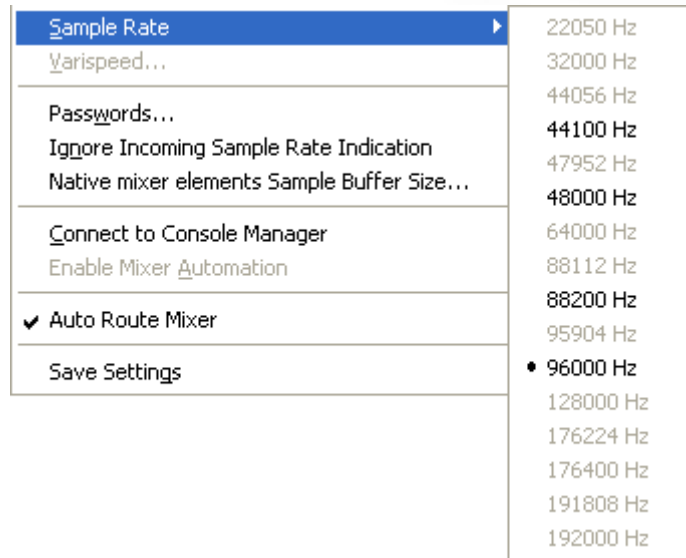
When the mouse pointer is on “Specific hardware settings” submenus will be displayed allowing hardware settings to be defined.



The example shown here is based on an SSL Soundscape Mixpander connected to an XLogic Alpha-Link MADI SX. The AES 64-96kHz mode can be selected (4 or 8 channels per connector), the MADI 64-96kHz mode can be switched between 96kHz legacy pattern and 96kHz frame pattern (as defined in the AES 10-2003 document), the number of MADI channels can be set to 64 or 56 (32 or 28 at high Sample Rates) and Sample Rate Conversion can be enabled for each pair of inputs on the AES/EBU input connector A.

The options displayed will be different for other SSL Soundscape hardware devices. Please see the relevant hardware documentation for more details.

Sample Rate



When the mouse pointer is on “Sample Rate”, a submenu appears that lets you select the Sample Rate.

In a multiple unit configuration, Sample Rates that are not supported by the Master Device will appear dimmed.

Note that if the Master Device supports Sample Rates higher than those supported by other SSL Soundscape hardware units in the system, these Sample Rates should not be selected even though they will appear as available in the submenu.

Varispeed



This setting is not applicable to the SSL Soundscape Mixpander hardware.

Passwords

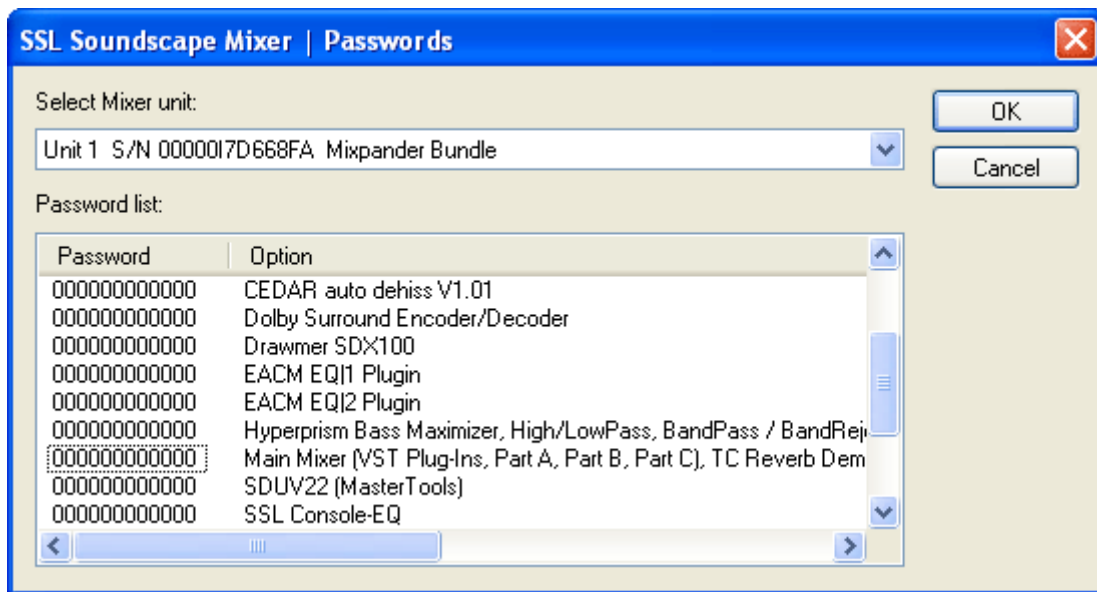


Clicking this item opens the “Passwords” window. Clicking the arrow to the right of the “Select Mixer unit” box calls up a drop-down list of all the installed SSL Soundscape audio cards. The Passwords list features all the software modules that are password protected and installed on the host computer. The SSL Soundscape Mixer itself must be enabled by entering the correct password in this window for the “Main Mixer (Part A, B, C)” entry (this was probably done via the Password dialogue when you started the software for the first time). The main mixer password also enables

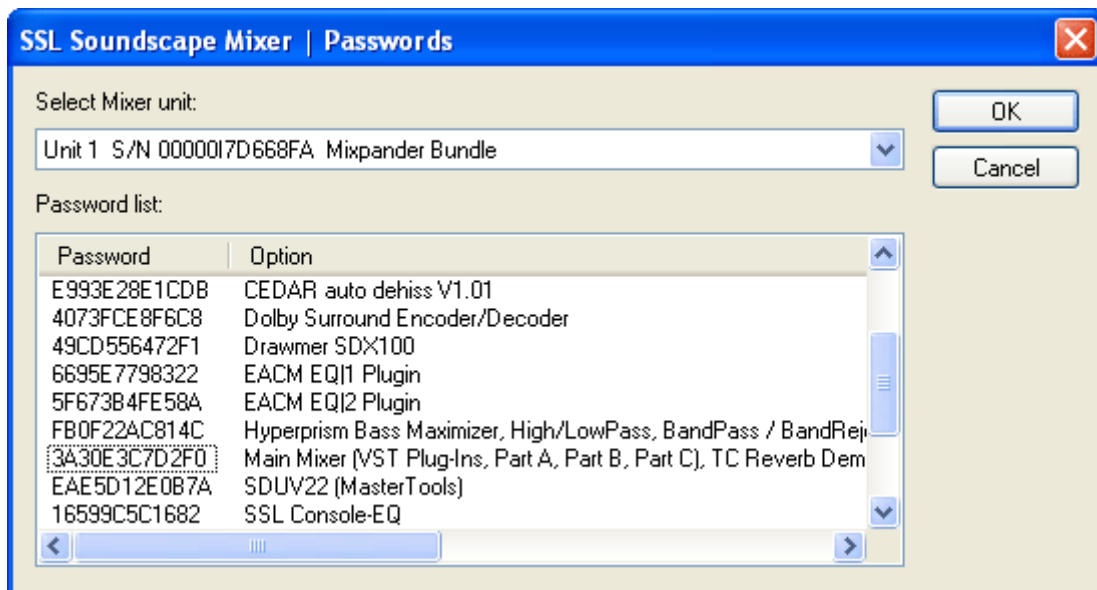
some Soundscape format DSP-powered plug-in demos (mentioned in the “Main Mixer” line if installed) and the VST/VSTi functionality (mentioned in the “Main Mixer” line if VST/VSTi dll files are present in the Soundscape VST folder).

The Mixer Password for a new SSL Soundscape audio card can be found on the Product Registration card, on a label on the card itself, on the product packaging or on our website if you have registered the product, along with all the passwords generated for that unit.

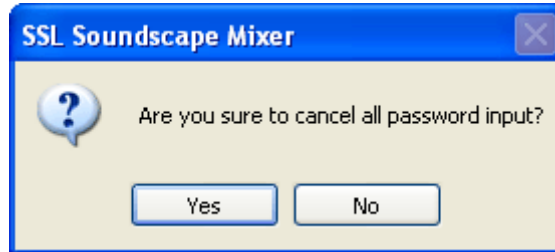
Initially, all the passwords are set to “000000000000”, as shown below in the column on the left:



Double-clicking a password entry will enable you to enter the correct password:

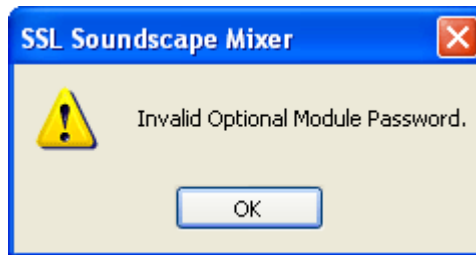


When all the required passwords have been entered, click the “Save” button to enable them and exit the window. If you click “Cancel” a dialog box will require confirmation that you wish to cancel the password input:



Click “Yes” to close the window, or “No” to make further corrections.

The SSL Soundscape Mixer will be deactivated and the following warning message will be displayed whenever an invalid password has been entered and the corresponding mixer element is present in the current mixer configuration:



NOTE: The passwords only use numbers 0 to 9 and letters A to F.

NOTE: If you have purchased a password for one single unit, the corresponding software module will be enabled for all the hardware units in the system, i.e., for all the Soundscape audio cards used by the SSL Soundscape Mixer. The password should only be entered for the unit it was generated for, with the corresponding password for the other unit(s) set to the default “000000000000”.

Ignore Incoming Sample Rate Indication

Ignore Incoming Sample Rate Indication

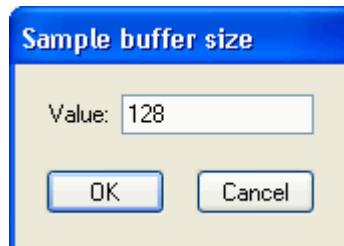
When this option is selected, the incoming Sample Rate indication is ignored, and the currently selected Sample Rate is maintained.

This is useful if the Master Clock source being used transmits an incorrect Sample Rate indication.

Native mixer elements Sample Buffer Size

| Native mixer elements Sample Buffer Size... |

Clicking this item calls up a dialog box which can be used to set the Sample Buffer Size for native mixer elements:



The default buffer size for native mixer elements is 128 samples. Typically, it should be raised if the PC is struggling to cope with the processing demands. Multiples of 64 up to 1024 can be used. If an invalid value is entered, the closest valid value below it will be used instead.

Connect to Console Manager

| Connect to Console Manager |

Clicking this item connects the SSL Soundscape Mixer to the optional Console Manager application which can be used to control the Mixer from a hardware control surface and to automate it. The “Mixer selection” parameter of Console Manager must be set to “First Connecting” or “Mixtreme”. If Console Manager is not already active it will be launched automatically.

NOTE: Console Manager is available from the Solid State Logic website and must be installed separately.

Enable Mixer Automation

| Enable Mixer Automation |

Clicking this item enables automation for the SSL Soundscape Mixer. It is equivalent to clicking the Automation button in the Toolbar. Automation can only be enabled if the SSL Soundscape Mixer is connected to the Console Manager program. When Automation is active, the SSL Soundscape Mixer transmits data to Console Manager whenever an automatable mixer control is used and responds to automation data received from Console Manager. Most mixer controls can be automated, with a few exceptions for some third party plug-ins.

Auto Route Mixer

| Auto Route Mixer |

Ticking or unticking this item respectively enables or disables the Mixer Auto Routing function. Please see the “DSP resources and Mixer Auto Routing” section of the “Mixer” chapter for details.

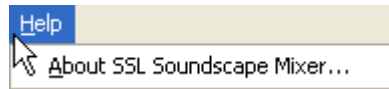
Save Settings

| Save Settings |

Clicking this item saves current parameter values set under the Settings menu to the registry.

NOTE: Parameters such as the current window size and screen position are saved as part of the mixer file.

9. Help Menu

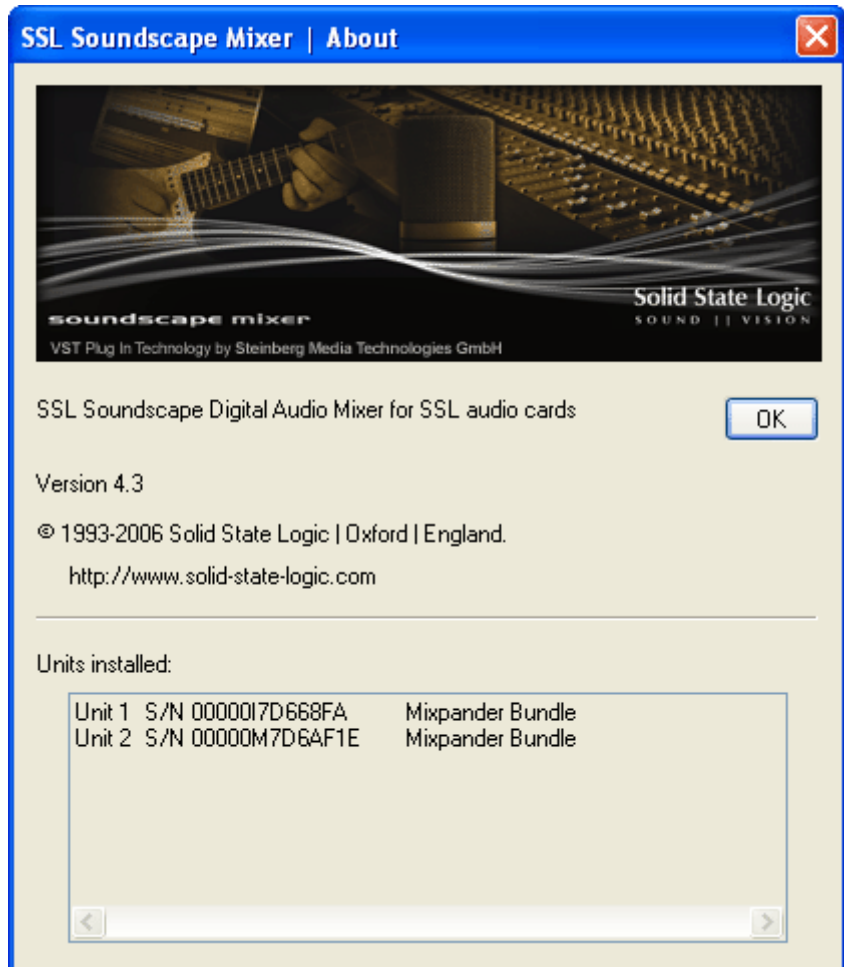


Clicking “About SSL Soundscape Mixer” under the Help menu opens the “About SSL Soundscape Mixer” window:

Some essential information is displayed in this window:

- The version number of the SSL Soundscape Mixer software.
- The serial number of each SSL Soundscape audio card in your system. This number is required when a plug-in password must be generated.

Clicking “OK” will close the window.



10. Troubleshooting

Hardware installation problems

Several problems relating to the installation of PCI cards are listed below.

Shared Interrupts (IRQs) on the PCI bus

Typically for PCs that have 5 PCI slots there are 4 PCI slots and 1 AGP slot, but as there are only 4 IRQ lines assigned to PCI, there will sometimes be one IRQ line that is shared between two slots. This interrupt line is connected on the motherboard to two slots (e.g. PCI slots 4 and 5) and therefore even if Windows or the BIOS tries to assign a different IRQ to each card fitted in these slots, it will be unable to, and this may cause problems. The solution may be to move the card to another free card slot in the PC.

A similar situation exists with on-board devices (i.e., on the PC motherboard) like VGA, SCSI, PS2, USB and network adapters where the IRQs assigned will have to be the same as for some of the PCI slots. Typically the AGP slot uses the same IRQ line as the nearest PCI slot.

Sharing Interrupts (IRQs) between SSL Soundscape audio cards and other PCI Devices

The drivers for other PCI devices may not allow sharing. In any case DO NOT share IRQs between a Soundscape audio card and a PCI card from another manufacturer unless you are absolutely sure that the other device's driver allows sharing. Most on-board devices will share IRQs with a Soundscape audio card without problems.

Incorrect BIOS settings for Plug and Play PCI Cards

The BIOS of the PC usually includes settings for Auto or Manual IRQ selection for each of the PCI slots. You may experience severe problems if the BIOS does not allow Windows to change or assign the IRQ during installation, due to conflicts between different PCI cards or on-board peripherals like serial or parallel ports. For normal use, the Auto setting should be selected for each PCI slot, so that the IRQ and memory settings are managed correctly. Only change this if you are fully aware of the requirements for each of the devices in your PC and of the potential consequences. If an APIC (Advanced Programmable Interrupt Controller) option is available in the BIOS, enabling it will provide additional interrupt resources.

PCI Bus settings

Incorrect PCI bus settings in the BIOS can create clicks, audio interruptions and even lock-ups. If a PCI Latency Timer parameter is available in the BIOS, set it to 64 or higher.

High speed SCSI cards

High performance SCSI cards like the Adaptec AHA-2940UW or other Ultra-Wide SCSI host adapters can block the PCI bus because of the high data rate, which may cause audio interruptions or clicks. If you experience clicks while using a high performance SCSI card, try reducing the maximum transfer rate.

Muting of the Mixer due to excessive use of DSP resources

The Motorola 56301 DSP has memory and DSP clock cycle resources that are shared between all mixer elements and third party DSP plug-ins that are active in the currently loaded mixer. The Status Bar shows $P=xx\%$ and $M=xx\%$ for each Soundscape audio card installed in your PC. If either of these figures exceeds the maximum (100%) for any single DSP then the SSL Soundscape Mixer will be muted.

However, the DSP processing power figure (P) is calculated from the figures reported by each individual mixer element or plug-in and as it is very difficult to calculate the “worst case” timing for each element or plug-in, there may be some inaccuracy in the reported figures. The actual muting of the Mixer occurs when there is really insufficient time for the DSP to complete the required processing for the loaded mixer configuration and this may happen with a figure slightly lower or slightly higher than 100%.

For a given mixer configuration, the “ $P=100\%$ ” DSP power limit can be reached or not depending on the current Sample Rate. This is because for a higher sample rate, there is less time for calculations. For instance, if you create a mixer configuration that reaches $P=100\%$ at 44.1kHz, then it will reach $P=108.8\%$ at 48kHz. The card will be unable to run this mixer file at 48kHz.

The memory figure (M) is accurately reported by the elements and plug-ins, but there are several different memory types that can be requested by elements or plug-ins and the figure shown is the “worst case” usage of any of these memory types. For instance, if a plug-in uses 75% of the X-memory, but none of the Y or P-memory, then the reported memory figure will be 75% even if the other memory types are completely unused. It is possible to reach $M=100\%$ and yet to be able to load more mixer elements or plug-ins that do not require the same memory type.

Please note that streaming also uses DSP resources, and this is not reflected in the values displayed in the Status Bar. Therefore, a mixer configuration that uses 100% of the M or P resources with no streaming will not function with streaming.

Error status indications

Processing Overrun (PO)

When the Mixer's DSP power requirement exceeds available resources, a Processing Overrun (PO) indication will be visible in the Status Bar, indicating that at the time of the message, the DSP did not have enough time to keep up with the processing demands of the current Mixer. There are three options to determine how error messages are displayed and cleared, set under the View menu or by right-clicking the Status Bar and using the pop-up menu. It is possible that you may not notice any effect on the audio when a PO error is indicated, depending upon for how long the audio was muted for.

Streaming Underrun (SU)

If severe interruptions of the audio streams occur and the PO message is not displayed in the Status Bar, then an SU message may be shown, indicating that a Streaming Underrun has occurred. The audio may be muted temporarily but if the error was very short, it is possible that you may not notice any effect on the audio.

Streaming underruns are a result of the PC being unable to transfer audio data to and from the SSL Soundscape audio card as required.

Recurrent error messages

In case of recurrent error messages:

- Try moving the SSL Soundscape audio card to another PCI slot, avoiding interrupt sharing if at all possible.
- If possible, try the SSL Soundscape audio card in another PC. If the problem persists, it will tend to confirm that the problem comes from the card.

Technical support

If you encounter problems that you cannot solve, please contact Solid State Logic Support.

The URL for online technical support is <http://solid-state-logic-en.custhelp.com>

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Visit SSL at URL: <http://www.solid-state-logic.com>

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